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EDITORIAL NOTES.

The Course of Gas Legislation.

MEMBERS of Parliament are resting from their labours until the 14th prox.; and meanwhile the Cabinet and the Government machinery that has been created for the purpose are steering the country through what appears at the moment to be the almost interminable chaos of war and of the whole world's affairs. The gas industry has not this session done much to contribute to the exhaustion of the country's legislators; for the bundle of Bills deposited with Parliament some eight months ago was the smallest that has been known for many a long year—we might say, for many a decade. But, as usual, there were a large number of petitions presented against the Bills; and, as usual (perhaps more so this time), there was as much formality as any intention to fight in the act of lodging petitions. The consequence was that the Committee work has been of a slender order.

Nevertheless, it is rare that a session is so sterile that it does not produce some matters of interest. One or two points arose in connection with the calorific standard and clause. With few exceptions, promoters now ask for the calorific standard and test as a matter of course. But this session saw various promoters suggesting a level standard of 500 B.Th.U. (total heat value), instead of 540 B.Th.U., with 7½ per cent. margin. The Board of Trade saw no objection to the severance from the standard of the marginal limb; and Select Committees, as also the Unopposed Bills Committee, were guided by the Board. A point this session that dawned upon those who study legislation is that the industry must depend upon the Gas Light and Coke Company to see that the apparatus employed in making the standard calorific test is that which is most suitable for ascertaining the total heat value of the gas, inasmuch as they have the right, through their Act of last session, to have such apparatus prescribed by the Metropolitan Gas Referees, who have no jurisdiction outside London. But it has been stipulated in the model calorific clause that the apparatus to be employed is to be similar to that prescribed for the time being by the Metropolitan Gas Referees. The Dewsbury Corporation desired to have it put into black and white in their Act that they were entitled to the apparatus that was most suitable for ascertaining the total heat value of their gas. But the Local Legislation Committee, controlled by form, decided that the model clause must be adhered to, and the prescriptions of the Metropolitan Gas Referees followed. Uniformity, of course, is the object of this. There have been other signs of an intention to unify calorific value testing as much as possible. It is not a new clause which provides that promoters shall not be exempt from any future general legislation. But it has hitherto only made quite spasmodic appearance; while in this session both the Board of Trade and the Local Government Board have urged the necessity of its insertion in all Gas Bills, with a view, so it is said, of bringing promoters under any subsequent general legislation affecting calorific testing.

Capital questions have also had prominence. The inhibition of the Treasury as to capital-raising has, from the first, been present in the mind of the administration of every gas undertaking in the country. But the Treasury were timid lest the possessors of Acts passed during this session should take it that the new capital powers granted by Parliament subsequent to the Treasury notification opened to them the door to fresh issues without sanction. They therefore decided that hasp, staple, and padlock should be applied in the shape of a clause specially prohibiting the promoters from issuing any part of the capital without their permission. This supercaution was unnecessary, but quite harmless. The capital position of gas undertakings in war time has been brought before Committees on sundry occasions. Hard times have come, and they will be sterner yet, in respect of capital-raising. With the reduced dividends that are being paid by some sliding-scale companies, stock is being sold to-day at par, and much under in some cases. And as was pointed out in our first editorial article on July 6, the new 4½ per cent. war loan has set a new standard upon the earning power of money. It is only right that those in charge of gas undertakings should see what, if anything, can be done to get relief from statutory conditions which, under the present exceptional circumstances, act as a sort of barbed-wire fence to securing capital on the best possible basis.

The Ascot District Gas and Electricity Company sought to secure relief from the auction clauses for the space of years directly affected by the war. But form said "No," though immediately after the same Committee gave the Company permission to make greater use of their credit by raising the borrowing powers to one-half proportion, in place of the customary one-third. In the Northwich Gas Bill, the Company (it is a maximum price Company) obtained capital conversion powers on a 6 per cent. basis, as their advisers feel that a 5 per cent. basis would not be much good. Also with a view to giving small investors a better chance, and therefore increasing the sources of capital, the Spennymoor and Tudhoe Gas Company desired that the standard time for the payment for stock purchased under the auction clauses should be extended from three to twelve months. Again form said "No." A very useful Act will be the Statutory Companies (Redeemable Stock) Act; and this should not be overlooked. Then the Local Government Board seem anxious to get more uniformity in the loan-repayment periods granted in municipal Bills, with a reduction of the periods. They have tried this session to persuade Committees to leave the decision of the periods in their hands. Committees, however, have not seen fit to relinquish their duties in this respect; and divergent results obtain. The Doncaster Corporation asked for 40 years within which to repay money raised for the purchase of land, erection of gas-works, and the general purposes of the undertaking. They had the time reduced to 30 years in respect of £55,000, and to ten years in respect of £10,000 for meters, &c. In the case of the Chelmsford Gas Purchase Bill, the Local Government Board reported against the periods of 35 years for the liquidation of the purchase money, 40 years for new plant, 30 years for new mains, and 20 years for stoves, meters, and fittings. The Unopposed Bills Committee generously gave these periods, excepting the 20 years for meters, &c., which was brought down to 15 years, though in the case of Doncaster a period of ten years was considered ample by another Committee. While the Chelmsford Corporation were allowed 35 years for the liquidation of their gas purchase money, the Lurgan authority were given 40 years. The condition of works and other things theoretically come into the reckoning in fixing the repayment period; but, as a matter of fact, Parliamentary Committees are not in the position to apply such factors to their decisions. Hence the looseness that is witnessed session after session.

There is really little else to say about the session so far as gas legislation is concerned. The Chelmsford, Lurgan, and Skegness Purchase Bills passed. The Northwich Gas Company resigned their new works proposals in view of the opposition shown, and consented to remain a maximum price Company for some inexplicable reason. A purchase clause, after the lines of the Chelmsford one of the preceding session, was agreed to between the Company and the local authority. Electricity schemes brought forward gas companies in opposition. The large schemes of concentration for London were withdrawn, as the Government were not disposed to have time absorbed by contentious matters of such magnitude while the war continued. The Yorkshire Power Company who wanted roving lighting powers were sent home to attend to business on the lines of the powers already possessed, and were informed that Parliament were not prepared to grant them preferential rights. The Spennymoor and Tudhoe Gas Company have been given the right

to hire-out dynamos in conjunction with gas-engines. The Plymouth Corporation have had their gas-fittings and hiring powers confirmed in respect of Devonport; and electrical powers on the same lines, existing as they did in Devonport, were granted by a Lords Committee in relation to the whole of Plymouth. But threatened further opposition by the local contractors in the lower House led to an agreement for the application of the model clause, with its limitation of liberty in connection with wiring and dealing in electrical fittings. The Northumberland clause was obtained in respect of an extension of the electric supply area at Southampton, though, in the special circumstances, it was refused by the Board of Trade and by the first House before which the Order came for confirmation. There will no doubt be further interesting points to extract from even this lean session's work when the Acts are at command.

Altered Conditions and Policy.

THE Chairman of the South Metropolitan Gas Company (Mr. Charles Carpenter, D.Sc.) did not, at the meeting of the proprietors last Wednesday, spend any time over making comparisons of the working and financial results of the past half year with the corresponding period of 1914, although had those proprietors who have a facile way of putting inquiries which have not much value attaching to them been technically capable, they could have discovered some points in the accounts in regard to which interesting information could have been elicited, if interrogatories had been qualified by the admission that one must not in disordered times, and working under irregular conditions, expect normal results. And gas undertakings have had much to face in the past half year which—not only in the financial, but in the working, results—have had a repressing influence upon the attempts to work up to the best standards of the past. All standards and guiding rules of administrative policy, as well as of ordinary working, have indeed been disturbed; and the Chairman's address to the proprietors was a succession of illustrations of this. The vein of explanation running through the address was not by any means intended as an excuse. No excuse was necessary. For many years regular working, regular price of gas (the lowest charged by the three London concerns), regular dividends, and a record of pioneer work put the Company beyond the call for any apologetic utterances from the chair. But what Mr. Carpenter desired to impress upon the proprietors was that new conditions had created new standards; and that these were not merely products of the war, but had their roots in anterior time. What the war has done has been to heavily accentuate the conditions, and so has established new lines of policy.

Making allowance for all the palpable changes that have been creeping over the conditions affecting the industry prior to the war, the administrations of gas undertakings would have been superhuman who could have foreseen the vastness of war and the contingencies into which life and the world's affairs were to be precipitated. The accentuation of the changes by the war has been the means of creating new precedents. Never again must it be that this country is allowed to suffer from the lack of coal supply while coal is going out of it at the rate of many tens of million tons per annum. The argument is present in mind as to the necessity for bringing into the country, through its produce, gold from abroad; but we also well know that it is not a good thing that the industries of this country should be generally crippled for coal, and the country's industrial prosperity be prejudiced and depreciated by high prices, while coal is going across the sea largely to feed trade competitors. Since the war started, certain gas undertakings have been close upon the rocks for the want of coal—the South Metropolitan with the others; the same gas undertakings to-day (the South Metropolitan among them), through the regulation of exports, are filling their stores, and making use of additional ground for stacking purposes in preparation for what threatens to be a very difficult winter. This is one of the changes that has taken place in the standard of administrative policy. Long, however, before the war was thought of, a condition had arisen through labour unrest which caused the standard of coal storage to be raised; and difficulties of coal delivery and vagarious supplies had caused the cry for export regulation to be raised more than once by Mr. Carpenter, as well as by others. What has now happened is not due to a plea pertinent only to the war, but to something antecedent.

While, however, coal storage is greater, prices are heavier; and, consequently, the coal placed in store means a larger expenditure of working capital which is lying idle as coal as long as the latter has to be kept in store. This is another change. Yet a further one to which Mr. Carpenter pointed is that, whereas in the old time the Company used to take their heaviest deliveries during the period of largest consumption—that is to say, during the winter time—they now, as a precaution against eventualities, take heavy deliveries during the summer in order to get supplies well in hand, and this lengthens the duration of storage. The putting of coal into store and the taking of it out again also cost money. Expenses increase; but safety must predominate in administrative policy. All this reacts upon the financial position; and where there is not a large balance of undivided profit, one to-day finds loans from bankers standing at an inordinate amount. It is so in the case of the South Metropolitan Company; and the Directors in order to reduce the loan are now making an issue of new capital to consumers and employees. Change begets change.

Reverting to the price of coal, the Chairman pointed out that those gas administrators who reckon on the expectation of past experience recurring—experience which encouraged a confidence that if in one year the price of coal went up through exceptional circumstances, it would be back again the next year—were now building on the sands. The fact stands out boldly that, before the war, the gas industry had been suffering continuously for three-and-a-half years from high coal prices, without any sign whatever of substantial relief. Then came the war, and the excessive prices due to it; and we know what has happened in connection with coal price regulation under the new Act. Mr. Carpenter, like other chairmen of gas undertakings, recognized in his speech the good work that Parliament has done in this respect; for, although the Act means dear coal for the length of the war and a period after, it does put undertakings engaged in public services, with the obligation upon them of pre-arranging the prices for their prime commodity, in the position to make their estimates by knowing the worst, and by having protection against awkward flights in the cost for their principal raw material. It does, as Mr. Carpenter intimates, seem totally unfair that gas concerns, with prices and dividends limited by the Legislature, should have such an unstable foundation for their operations as an unregulated price of coal. However, Parliament has realized that something must be done to defend the country against a condition of ungoverned profit-grabbing on coal; and it is hoped that good effect will come from what has been done, not only during the present strain, but through the lesson that the passing and operation of the Act provide for those the Legislature felt bound to put under restraint in their dealings. It is a pity that some limitation was not applied to the rates of freight. There are admittedly difficulties in the way; but, as was shown by an editorial article last week which gave the actual additional war costs incurred by gas companies in running their own boats from Newcastle to London, the freights that have been demanded and obtained have had a margin of profit attached to them to the fixing of which only the factor of greed has been applied. The South Metropolitan Gas Company have now become ship-owners; and the Chairman frankly acknowledged that probably the Directors had erred by not placing the Company in the position of owners before this. There were satisfactory reasons for delay; but past policy in this respect is not going to be the rule for the future. Never again will the Directors rely on other people carrying their coal—at any rate, that is the present determination.

The Chairman also spoke about the effect of the war upon residuals; he gave the proper reply to those persons who have thought there should be a restriction of profits on residuals; he spoke of the employment of temporary female labour to help to compensate for the loss of men, and of the gratifying reports relative to the change; and he hinted at the probable appearance of the Company in Parliament with a Bill for the purpose of consolidating their parliamentary powers and regularizing certain matters to make them fit the changed circumstances of to-day. The prohibition of stock issues to proprietors at under par—unconditional on high prices of materials preventing gas being sold at low prices, and so bringing the dividend down below the standard set by a Government backed 4½ per cent. security—now requires amendment; and the Directors will probably consider the possibility of altering the sliding-scale provisions, so that the average of the ordinary price (and not the highest charge) for a half year is taken in fixing the

amount of dividend to be paid. It seems unfair that, when the price of gas has been at the old figure during three months out of six, the proprietors should be deprived of all advantage by the raising of the price during the second three months.

The address took the proprietors over much ground in relation to which there has been change; and it shows us how largely, added to much change that has preceded, administrative policy has been forced by external circumstance to remould itself.

Retrograde Widnes Councillors.

THE Widnes Town Council have pledged themselves to a retrograde movement; and we hope the ratepayers, or, if not the ratepayers, Parliament, will defeat it, and keep the Council in the straight way that has placed the gas concern (supplemented by able management) in the premier position in the matter of gas prices, and has given to the undertaking financial stability second to none of its kind in the United Kingdom. Widnes has been a model to other local authorities of what should be the policy in the municipal conduct of a public trading service. It is a policy that has done so well for the borough in the past that we trust it will be continued, and without any qualifications attaching to it. To put the matter quite briefly, the Council have, at the instance of the Finance Committee, and with the "blessing" of the Chairman of the Gas Committee (Alderman H. S. Timmis), agreed to invoke Parliament to amend section 102 of the Widnes Improvement Act, 1867, and permit profits to be allocated in aid of the rates. The people of Widnes not long ago were opposed to the vicious policy of indirect and inequitable taxation through the gas consumers, and so helping to relieve the rates of those who are not consumers; and we hope that, if good sense in this matter has forsaken the Council, the gas consumers will see to it that their erring representatives are again put on the right path, and in a manner that will act as a warning not to go astray again.

The councillors who have plotted this move, however, with the past experience before them, are adopting new strategy. They are now dangling before the gas consumers a conditional profit-appropriation, with the view of appeasing them. They say we will, out of the gas profits, pay for maintenance and improvement of the undertaking, provide for interest and sinking fund, and build-up a reserve fund. There is nothing new in this. It is precisely what every local authority has to do under statutory instruction before touching profits. Then comes in Hindenburg's move to get his military claws round Warsaw—the Hindenburg of Widnes being Alderman S. Owens, the Chairman of the Finance Committee, and Warsaw is represented by the gas profits. The clever ruse is that, if and when gas costs the ordinary consumer in the borough more than 1s. per 1000 cubic feet, then the amount of profits to be taken in aid of the rates should not exceed £2500 in any year. "What "could be fairer?" blandly asks Alderman Owens. Our reply is to leave things as they are. Why should a tax of even £2500 a year be put upon the gas consumers who have liquidated capital and discharged interest obligations without recourse to the ratepayers, who have found the money to maintain and renew the works, and who have paid the rates and taxes upon the undertaking? This being so, what moral right have the ratepayers (*quâ* ratepayers) to any claim to benefit to the extent of £2500, or any other sum, from a condition of things which the gas consumers, with highly efficient management, have created? Let this be pointed out to the gas consumers: If they agree to this proposal, and the Council obtain power from Parliament, the power will be exercised; and the time will come when they will have to contribute annually £2500 at least to the rates over and above the part that the undertaking as a ratepayer already contributes. The matter should be looked fairly and squarely in the face by the consumers. It will be many a long day yet before coal and other materials requisite to gas manufacture will again be as cheap as in the past; labour is dearer; rates and taxes through the war are going, and have gone, up; and income-tax on the profits proposed to be taken will be heavy. There has never been a time, too, in the history of gas supply when the outlook for residual products, through increasing competition, was more nebulous than it is to-day; and the undertaking has now to compete with a cheap supply of electricity. All these new conditions affecting finance the undertaking will have to bear. The best management in the world cannot wholly avert them. Then what are the chances for the gas consumers of Widnes that the price of gas will for a protracted period to come, if ever, fall below 1s. per 1000 cubic feet? The price may have to be permanently higher, without a burden of £2500 a year upon it. Given the power—the consumers should mark this—there will be no preventing the price of gas permanently bearing the £2500.

There has been no Chairman of a Gas Committee whom we have held in greater respect than Alderman Timmis; and we know he will not object to a little plain speaking. He appears before us to-day, as we understand him, a confessed apostate in the matter of pure municipal trading —the municipal trading (which we have never opposed) that runs a public service in order to give the patrons a supply at the lowest possible price, consistent with financial stability, and without calling upon the ratepayers for support, and without contributing money (beyond the due of a fair legal rating assessment) to relieve the ratepayers of their obligations. He stands before us now the maker of one of the most illogical speeches that we have ever read on the subject of profit-taking for rate-relief. Alderman Timmis says he has not changed his view, that the unrivalled position of the Widnes gas undertaking is largely owing to an old Act which forbids profit appropriation for rate relief. Parliament and the Local Government Board will bear in mind this admission when, if the ratepayers permit the proposed Bill to go forward, they come to adjudicate upon it. He also suggests that he does not recede from the principle that profit appropriation is not correct. But, to help his friends, who are longing to handle from the gas profits £2500 a year, and more if possible, Alderman Timmis, like the old lady who found comfort in the "blessed" word Mesopotamia, finds refuge and excuse in the "blessed" word "expediency." We have searched through his speech for, in this case, any rational reason for giving "expediency" an ascendancy over correct principles, and have failed. He says: "We have to "face the fact that electricity has come to stay, and that it "is an illuminant and motive power which many manufac- "turers require. The necessity for gas at a cheaper rate there- "fore disappears." If this means anything at all, it is that the manufacturers who prefer electricity are to have it at a cheap rate, and are to be rewarded for not consuming gas by the gas consumers finding for rate-relief £2500 at least a year, by paying more for gas. In other words, the electricity-using manufacturers are to share in the rate-relief provided by the gas consumers, among others the prepayment gas consumers, many of whom are their own workmen. The people who propose this thing, the manufacturers themselves, ought to be thoroughly ashamed of such a position, and at once reject the proposal that they should be recipients of compulsorily extracted benevolence from the gas consumers. If the Bill goes forward, we hope to see Alderman Timmis in the witness chair interrogated on his speech in favour of the crushing of correct principles and the setting-up of a corrupt expediency.

The proposers of this scheme to "set back the clock" in the matter of proper policy in the management of municipal trading concerns, may take it for granted that the Local Government Board, who prohibited gas-profit appropriation in aid of the rates in the Potteries, and who helped to curtail the system at Salford and Oldham (where profit appropriation had previously existed) will, if the Bill goes forward, report against the scheme for a town where things have gone so well without profit taking, and which has given to the country such an excellent example of the good effect of pursuing the right course. The proposers may also take it for granted that Parliament, who, when Glasgow in 1910 asked them to confirm its unexercised power of gas-profit appropriation for the purpose of aiding and abetting in a changed policy, for answer annulled the power, will not set up the power for the first time where it has not been possessed. Parliament will unquestionably say that the Widnes gas undertaking itself supplies them with the best possible evidence that a wrong would be done in sacrificing upon the altar of an abstract expediency sound principles that have had as issue concrete beneficial results.

Analysis of the Metropolitan Gas Accounts.

The analyses of the half-yearly accounts of the Metropolitan and Suburban Gas Companies by Mr. F. J. Bradfield, the Secretary of the Commercial Gas Company, appear on later pages this week; and they will be found of peculiar interest both by comparing the results of the different companies, and by turning

up the analyses for the corresponding half of last year to make contrast of the working under peace and war conditions. It is observed that on the past six months the Brentford production of gas per ton of coal carbonized—12,103 cubic feet—was the lowest of the seven companies whose accounts are explored; and the South Metropolitan ranked next with 12,180 cubic feet. The Commercial Company were on top with 14,019 cubic feet; the Gas Light and Coke Company made a good showing with 13,044 cubic feet; and the Wandsworth, South Suburban, and Tottenham Companies did well with respectively 13,426, 13,010, and 12,811 cubic feet. Looking at these figures, the time has about passed when anything less than 13,000 cubic feet from the coal used in London can be considered good working. The South Metropolitan Gas Company, according to the analyses, paid the highest price for coal per 1000 cubic feet—21·45d.; the prices paid by the Gaslight and Coke and Commercial Companies being, respectively, 15·73d. and 15·54d. The South Metropolitan Company did best in residuals per 1000 cubic feet—11·71d., as compared with 7·84d. by the Gaslight and Coke Company, and 7·12d. by the Commercial Company. The result is that the net cost of coal, oil, &c., for the South Metropolitan Company is 9·74d. per 1000 cubic feet; for the Gaslight Company, 7·89d.; and for the Commercial Company, 8·42d. The average cost of coal per ton was in the case of the South Metropolitan Company, 20s. 9·57d.; Gaslight and Coke, 19s. 4·35d.; Commercial, 19s. 4·91d. The tables are packed with interest—one other of the items being that the percentage of stoves at rental to consumers is 98 in the case of the South Metropolitan Company, 81 in that of the Gaslight Company, and 70 in that of the Commercial Company.

Saving Gas and Toluol Recovery.

The Parliamentary War Savings Committee advise the public to use as little gas and electric light as possible in order to save coal. The recommendation is pleasantly simple; but, so far as gas is concerned, it is not an economic one. The Committee ought to know what they are talking about, or rather ought to get proper advice themselves before acting as advisers to the public. Coal would be saved by using less electricity for lighting purposes; coal would be saved by using less gas for any purpose. But as the "Yorkshire Post" has been telling its readers—and it seems to be about the only daily paper in the country that has been sufficiently informed to call attention to the matter—the more the consumption of gas is reduced, the more restricted becomes the source of that absolute necessary to victory—toluol. Our Yorkshire contemporary does not mention that reduction of gas consumption also means the curtailment of the source of that necessary to the production of picric acid—carbolic acid; also that the smaller the consumption of gas, the greater the restriction of the source of the best qualities of sulphuric acid. The gas industry, in the production of these things, is acting very patriotically by not sweating undue profits out of the country—in fact, in connection with sulphuric acid, it is using (in order to give the Government what they require) an inferior quality itself, to the detriment—chiefly through a certain impurity, from which relief is being sought—of the appearance of its sulphate of ammonia. If the War Savings Committee had advised the people, as they have been counselled in Germany, to use as much gas as possible, they would have been doing the right thing. What should be altered is the crude consumption of coal for domestic purposes. The coal ought to be passed through the retorts at the gas-works, so as to save its constituents—the gas and coke only being used for fuel purposes. The treatment of the gas and other products would increase the supply of the ingredients for explosive manufacture that the country requires, as well as the bases of the dye colours of which there was such a threatened shortage not long since, owing to the disability under which Germany is labouring in the matter of conducting an export business as of yore. The "Yorkshire Post" had a little fall in supposing that the coke-oven plant owners were not doing a good part in connection with the recovery of toluol; and there were protests from that quarter.

The Sliding-Scale in War Time.

The sliding-scale system of price and dividend has, generally speaking, worked very well in connection with gas companies; but the war has projected a defect upon notice, which has hardly been observed before, or, if it has been, people have been content to let it go. But in recent times the price of coal has gone up considerably; and the price of gas has had to be raised by an amount which is rather impressive in an industry more accustomed to reductions of charge than to advances. The consequence is that the dividend has slipped back in some cases in uncomfortable measure. The high cost of coal is likely to persist for some time; and the price of gas must perforce—perhaps not keep up to quite the present height, but must be, in many cases several pence higher than before the war. Some of the companies who have been compelled to substantially raise their prices did not do so until April last. The sliding-scale has half-yearly, and in instances yearly, application; but let us take a half-yearly example. Under the terms of the sliding-scale, the amount of dividend is based upon the maximum price charged in the half year. The past half year illustrates the unfairness of this. The consumption of gas in the first three months of the June half year is, as a rule, much higher than in the second three months; and this larger supply the consumers obtained in many cases at lower price than ruled in the second quarter. But, under present circumstances, the proprietors obtain no benefit from the fact that the greater part of the supply was at the lower rate, owing to their dividend being based on the higher price charged in the half year. The question has been raised in certain quarters as to whether gas companies cannot secure an amendment of the provision, so as to have the dividend based upon the average price charged in a half year, instead of the maximum price. There is no inducement at present for a company who see a prospective advance is imperative to defer it from January to April or from July to September, or for a company who see the position is ripe for a reduction in price to make it in April or September instead of waiting till July or January. The average of the ordinary price in a half year seems to be a very fair suggestion. The matter was referred to during the proceedings at the meetings of the South Metropolitan Gas Company and the South Suburban Gas Company, both of which are reported this week.

In the Southern Suburbs.

The South Suburban Gas Company did well in their past half-year's trading under the adverse circumstances. They have had to raise the price of gas like most other companies owing to the exorbitant advance in the price of coals and the height of freight rates. Though dividends have been reduced in consequence, the proprietors, at the meeting last Friday, felt very satisfied with the position, and with the story the Chairman (Mr. Charles Hunt) had to tell. The troubles of the half year have compelled all chairmen and directors to devote an immense amount of time to saving the interests entrusted to their care from greater depreciation than was unavoidable. During the trying period, no Chairman has been more faithful to the trust reposed in him than has Mr. Hunt; and graceful acknowledgment of this was made at the meeting by Mr. John Boraston on behalf of the Directors. On one comparatively small point, there has been in our columns and elsewhere a little criticism in which the Board have had some interest. This was in relation to their scheme for unifying the meter-rents throughout the Company's area. The Chairman made a very frank statement on the subject, and told of the fair settlement now effected. The South Suburban consumers are to continue to enjoy their old flat-rate of 3s. per annum; and the Bromley and West Kent consumers are to come under a flat-rate of 6s. "All's well that ends well."

Dangers Ahead for Sulphate of Ammonia.

An unanswerable case for the whole number of sulphate of ammonia producers acting as one man through the Sulphate of Ammonia Association appears in this issue (p. 344). The matter is of supreme importance—more so than some producers seem to think. Sulphate of ammonia organization in this country has done wonders hitherto for home production; and this is seen by the single fact that the world's consumption of sulphate of ammonia rose from 250,000 tons in 1896 to 1,250,000 tons in 1913, with the price moving between £11 and £14 per ton, as against £7 to £8 when the Sulphate of Ammonia Committee first commenced their operations. But the work that lies before is of a sterner order than anything that has preceded in connection with sulphate of ammonia; and the case now presented lifts the veil and exposes certain things which, if there is not unity and definite purpose among the home producers, and a serious attempt to exercise a proper influence in the world's markets, will put us at the end of

the war in a very precarious position in respect of this commodity. Several times we have shown what, preceding the war, the German producers were doing, by steadfast policy, in capturing the best of the overseas markets—those showing the greatest financial stability—and the success that by quality and price they were achieving in elbowing us out of these markets. Now we learn that German producers are not sitting still while war proceeds; it was idle to suppose they would do so. There is the neutral outlet; and the German Sulphate of Ammonia Syndicate have approached a firm of compatriots in a neutral country asking them to carry on their propaganda work there during the war. This does not look like a dormant state. Then a Bill has been introduced into the German Reichstag with the object of creating a commercial monopoly in nitrogen in Germany. This is due to the output of synthetic nitrogen and to the substitutes that have been found for nitrate of soda during the war, by which German nitrogen producers have made both German agriculture and industry (the explosive industry especially) independent of foreign supplies. The monopoly is being opposed by the Badische Company, who have stated that they will shortly be making per annum 300,000 tons of the synthetic commodity. This means, if the Bill passes, that the 800,000 tons of nitrate of soda which Germany used in 1913 will go begging round for other markets. Competition will come not alone from Germany, but from other producers—including those making cyanamide (nitrolim) and Norwegian nitrate of lime. Home producers must be prepared for the conditions that will, with certainty and in strength, come upon us in this market when peace is declared.

A Silly Anonymous Query.

It is not our custom to pay attention to anonymous communications. As a rule, such missives have speedy transference from envelope to waste-paper basket, which is the proper destination for communications to which writers have not the courage, or are too cowardly, to append their signatures. But we have an anonymous inquiry this week from a person who obviously does not know the facts of the matter, and so out of sheer pity for him we give an answer to his main points. He writes his inquiry upon the side of p. 234 of the "JOURNAL" for the 3rd inst., evidently adopting this course with the intention of further covering his tracks. On that page, it was pointed out that a rise of 1s. per ton in the price of coal represented about 1d. per 1000 cubic feet of gas made, and that 1d. on the total sale of gas by statutory gas undertakings of the United Kingdom meant £828,843 to be found by the gas consumers. "Why the consumers?" asks the person skulking behind the screen. And he supplements this by the further interrogation: "Why cannot some of it come out of the colossal dividends and reserves of the gas industry? Why should the industry not bear a share of the burden of the war?"

The Answer.

We think if our anonymous interrogator had read the recent reports of the proceedings at the meetings of gas companies, he would not have put his absurd inquiry. However, about those "colossal" dividends. If he will trouble to look down our share list as published prior to the war, he will see that an investor, under the regulation of Parliament, thought himself lucky if he had a "colossal" dividend of about 5 per cent. on his investment; and, at the present time, owing to the increase in the price of gas and the operation of the sliding-scale, he has to content himself with £4 4s. and £4 8s. per cent. in the case of two of the large London Companies, subject to an income-tax which is of an order that causes very material shrinkage. As to the "colossal" reserves, these are strictly limited by Act of Parliament. They come out of the profits made by the companies, which profits are derived from the pockets of the consumers. These "colossal" reserves are as much a protection to the consumers as to anyone else. But when coal and ship owners cause large parts of reserves to vanish, they have to be built up again from profits, the source of which is the gas consumers. "Why should the industry not bear a share of the burden of the war?" Why should we waste space re-telling to a man the long story of what the gas industry is doing in connection with the war, and of the heavy burden being borne without complaint, when that man might have been in possession of the facts by reading beyond the particular lines in which he, for personal motives, is closely interested.

Coal Exports Reduction.

The Coal Exports Regulation Committee have during July been fully exercising their powers; for the reduction in the month compared with the corresponding period of last year was 3,185,921 tons—the highest showing of any month this year. With this return, we have the total reduction for the twelve war months. It amounts to 29,566,410 tons; while the Coal-Mining Organization Committee of the Home Office estimated that the savings to be effected on the exports would total to 24 million tons a year. At the time the report was issued, we expressed the opinion that the Committee had rather underestimated the savings. The actual quantity is in excess of their calculation by upwards of 5½ million tons. Yet the Coal Exports Committee have only been at work less than three months, and, of course, it took a little time to settle down to the work. The saving effected goes a long way towards compensating the shortage of output compared with previous years owing to miners having joined the Forces; and thus supplies for home use should be, with the miners putting their backs into the work with greater vigour and continuity, ample under present conditions.

Denaturing Spirit or Alcohol.

Some months ago, an announcement was made by the Board of Trade of which no doubt due note was at the time taken by inventors, who will be interested to study the fuller particulars now available regarding the matter referred to. The statement made was that international competitions had been organized by the Russian Ministry of Finance in respect (1) of methods of utilizing spirit or alcohol or their products, and (2) of new substances for denaturing spirit or alcohol. The particulars since received of the conditions governing the competitions should serve to stimulate investigation in a direction which is of great industrial importance. As regards the first competition, and glancing at the aspect of the offer with which readers of the "JOURNAL" are more closely connected, it may be mentioned that prizes ranging from 75,000 to 5000 roubles will be awarded for the invention or perfection of apparatus for the utilization of spirit as motive power, fuel, or illuminant. In other branches, prizes of 60,000, 30,000, and 10,000 roubles respectively will be awarded for the invention of a novel means of adapting alcohol for the preparation of such a product as shall, by its nature, absolutely differ from the spirit from which it is made. Three prizes of 50,000, 20,000, and 5000 roubles are offered for the invention of a novel method of utilizing spirit for the preparation of a product, of which spirit or its products will appear as one of its component parts or dissolvent—providing that spirit cannot be extracted profitably from the product. Then three prizes of 30,000, 15,000, and 5000 roubles will be awarded for the invention of a novel method of utilizing spirit in productions where spirit or its products would serve as temporary intermediary dissolvents of either of the extracted or precipitated materials. As for the second competition, which has for its object to extend the use of spirit for technical purposes, three prizes of 30,000, 15,000, and 5000 roubles are offered for novel denaturing materials, for improving the existing methods. Inventors may reserve the right of benefiting from their ideas, and of protecting themselves with patents; and they should, without delay, secure copies of the full conditions from the Commercial Intelligence Branch of the Board of Trade, No. 73, Basinghall Street, E.C.

International Gas Congress Papers.

The programme of papers, so far as at present arranged, for the forthcoming International Gas Congress in connection with the Panama-Pacific Exhibition, and as published in the "American Gas Institute News," shows that there will be submitted contributions from this side prepared by the late Mr. Edward Allen, Mr. Charles Carpenter, D.Sc., Mr. John Bond, Dr. W. B. Davidson, Mr. J. Ferguson Bell, Mr. Walter Hole, and Mr. F. W. Goodenough. In no case, however, is it possible for a paper to be presented personally to the congress by the author. A symposium on "Illumination" will consist of six papers arranged by Mr. C. O. Bond, of Philadelphia; and the National Commercial Gas Association will also present papers dealing with the "business side." Other communications will include the "Development of Water Gas," by Mr. O. B. Evans, of Philadelphia; "Deep Fuel Combustion as Applied in Water-Gas Manufacture," by Mr. A. G. Glasgow, of London; "Modern Coal-Gas Processes," by the Society of Gas Engineering of New York; and the "Substitution of the Heating Value for the Illuminating Value in Gas Testing," by Dr. E. B. Rosa, of the Bureau of Standards.

PERSONAL.

Mr. A. S. CAMPBELL has been appointed Secretary of the Wellingborough Gaslight Company—succeeding the late Mr. S. H. Kimbell, who held the position for forty-two years.

Mr. E. BERTRAM WILLIAMS, of Messrs. John E. Williams and Co., Manchester, has received a Commission as Sub-Lieutenant Engineer in the Royal Navy until the end of the war.

We regret to learn from Mrs. Bidwell that her husband Lieut. G. D. BIDWELL (who, it was mentioned in the "JOURNAL" some time since, had joined His Majesty's Forces) was wounded on the 7th inst. at the Dardanelles, and is now at the Deaconess Hospital, Alexandria.

The appointment of Assistant Inspector to the Trench Warfare Department, at the Ministry of Munitions, has been conferred on Mr. B. F. BOTWOOD, draughtsman to the Gas Distribution Department of the Birmingham Corporation. Before taking up service in the gas undertaking, Mr. Botwood was engaged with Messrs. Kynochs.

Dr. W. B. Davidson, whose appointment as Chemical Engineer to British Dyes, Limited, was recorded last week, will, it has been decided by the Works Sub-Committee (subject to the approval of the Gas Committee and the Council) be succeeded as Engineer of the Nechells works of the Birmingham Corporation Gas Department by Mr. E. B. TOMLINSON, the Works Engineer at Windsor Street. Mr. G. C. PEARSON, the Superintendent at the Coal-Test Works, has been appointed to fill the position vacated by Mr. Tomlinson. It is understood the position of Superintendent of the Coal-Test Works will not be filled until after the war.

On leaving Birmingham to take up his new post as Works Superintendent at the Birkenhead Gas-Works, Mr. H. E. STONE was presented by the staff and workmen at Nechells with a gold watch, suitably inscribed, and a case of cutlery. The presentation was made by Dr. Davidson, who, with Mr. T. Brooke (the Works Superintendent) and others, spoke of the good work Mr. Stone had done, and wished him every success in his new sphere. Mr. W. J. SAVAGE, on leaving to take up the post of Chemist to the Rochester, Chatham, and Gillingham Gas Company, has also received substantial evidence of the goodwill of the chemical staff at Birmingham, of which he has for some time past been a member.

It was stated in last week's issue that Mr. W. D. CHILD had retired from the position, which he has held for nearly forty years, of Engineer and Manager to the Romford Gas Company. In the report of the Directors for the past half year which has since been sent out to the shareholders, they announce with regret the death, in April last, of their late Chairman, Mr. Joseph Smith, J.P., who, for a period of nearly half-a-century, presided with devotion and success over the Company's affairs. Mr. W. G. Wilshaw, who for upwards of 25 years has been a member of the Board, has been installed as Chairman. To fill the vacancy on the Board, the Directors have nominated to the directorate Mr. Child; and this nomination the shareholders will at the forthcoming meeting be asked to confirm. As this involves Mr. Child's retirement from the position he has for so many years held, the Directors will ask the shareholders to grant him a retiring allowance, and thus mark their sense of the value of his prolonged services.

ELECTRICITY SUPPLY MEMORANDA.

ELECTRICITY undertakings, like gas undertakings, are not just now enjoying cloudless skies. There are several more municipal concerns than customary that have ended the financial year with deficits, or a shrinkage of the surplus; and this with coal under the contracts made before the war. In the current year, there will be a still more serious showing for some of them, in view of the higher prices of fuel under the new contracts, and the cost of materials and labour generally. Where deficits or shrinkages of the surpluses are due to war conditions, there is no possible use complaining. But where deficits have become chronic, or where financial stability has been affected through the neglect of proper provision of reserves and for depreciation, the present conditions bring such circumstances into relief; and dissatisfaction is being heard from various places. When the annual accounts of the Electricity Department were presented to the Corporation of Bristol—accounts which on their face show quite a respectable condition, as municipal electrical accounts often do, until one begins to look critically into the constituent parts—Mr. Witty described the concern as a colossal failure, owing to inadequate provision in respect of depreciation. This gentleman has given notice of a motion for the rescission of the resolution for the adoption of the accounts; but what good this will do is not clear. At Manchester, too, Mr. Councillor Clyne has tabled a motion, asking for an inquiry, by an independent expert, into the working of the electrical undertaking; one purpose being to inquire whether the great scheme for the construction of electricity works at Barton should not be deferred until after the period of national financial stress. The Kingston-on-Thames people are getting very weary over their electricity concern; and with all the wrestlings of Mr. J. E. Edgcome, the Electrical Engineer, to improve things, the undertaking is loth to depart from its nearly life-long habit of producing a deficit. Last year it made a loss of £1295; the year before, £720; and during its entire career, it has managed to saddle the ratepayers with a net loss of £18,119. There is a quite laughable aspect of the so-called deficit of £1295 for last year. It is really much more than this; and it would have been better to have openly acknowledged it than try to hide the fact by throwing dust into the eyes of the ratepayers. In connection with the public lighting restrictions, gas companies are allowing local authorities for unconsumed gas; but though Kingston-on-Thames used 71,000 units of electricity less for street lighting, the money taken from the ratepayers for the purpose was £33 more than in the preceding year. The delightfully explicit explanation to the Council by Mr. Alderman Lyne, when challenged on this point, was that the Committee had not saved so much as was fancied, seeing that they had "simply saved the cost of generation, because the machinery had to be kept running just the same." Much the same thing is said by Chairmen of Committees whenever low prices to some consumers are attacked; and, if these statements were all pieced together, it would be found that there was precious little left on which to hang all the other expenses associated with the capital, establishment, and other working charges, besides those of generation. We suppose chairmen of electricity committees are not aware that the public lighting does help to push-up the peak of the load, and does cause a fair amount of expenditure when most good folks have gone to bed, and prefer to be without lights than with them. There are some aldermen and councillors who are awfully good natured, and will swallow anything. What they say on such matters probably serves for the layman; but people who know better—well, they smile indulgently when affairs are in a tight corner. The electricity tariff at Kingston has been—notwithstanding the charge for street illumination of which the public have been deprived—raised practically all through, in order to improve things in the current year; but it is not anticipated that the additional revenue will be co-terminous with the shortage. The question has been again raised as to the sale of the undertaking; but Alderman Lyne solemnly asked who is likely to be prepared to buy it at this time, or to form a company for the purpose of running it? Echo answers, Who?

Dissatisfaction, and Inveterate Deficits.

Diesel Costs

There was one point regarding generating costs that was made much of at the Kingston-on-Thames meeting—obviously for the purpose of putting a feather in the cap of the Electrical Engineer and of the Electricity Committee. For the admiration of a Council without technical knowledge of these things, it was stated that the cost of fuel last year with the steam plant had been 1·802d. per unit, and with the Diesel engines—one of 400 and the other of 600 B.H.P.—0·424d. For fuel only! It is not fair to take fuel only. The comparison should be from the capital to the final charge for generating, when plants of such distinctive characteristics are being compared, because what one form of plant may gain on the fuel may be lost in some other way. The past year, too, has not been a normal one for comparison purposes, nor will the coming one be so, with coal dearer, and with the prospect, as Sir Corbet Woodall was pointing out the other day [*ante*, p. 280], of oil becoming scarce in this country owing to the shortage of tank-steamers. The oil-fuel cost quoted at Kingston is with oil at the old contract prices; for it was only on June 15 [p. 632] that we were mentioning the heavier price the Kingston Corporation are paying for oil for the Diesel plant under the new contracts recently entered into. It was also then remarked that there were differences in other costs than fuel which should be taken into consideration, in order to arrive at comparable costs per unit. Quite lately the Diesel Engine Users' Association were meeting at Kingston, and were considering the question of the allowance for depreciation of Diesel plant in connection with income-tax assessment; and a resolution was then passed expressing the opinion that the allowance made by the Inland Revenue Authorities—5 per cent. on the diminishing capital value—was inadequate, and that at least 15 per cent. per annum should be claimed. This expression of opinion speaks volumes to an engineer.

And Diesel Troubles.

The Diesel Engine Users' Association have not only been considering the depreciation allowance for income-tax assessment, but they have been collecting data as to lubrication, over-all costs, and practices in connection with the working of the plant. But a protecting veil of secrecy has been thrown over the data; and they are only to be circulated among the members. This is not such a good advertisement for the Diesel engine as openness should be, if all is well. If the engine has nothing of which to be ashamed, then why hide these matters? Another thing that does not look well, apart from the high depreciation allowance claim mentioned in the previous paragraph, is the high premium asked by insurance companies for insurance against any breakdowns of Diesel engines—so high are the rates that a considerable number of plants have not so far been insured. This is a matter with which not long since Mr. W. A. Tookey was dealing before the Junior Institution of Engineers. Broken crankshafts, seized pistons, and other serious accidents have been mentioned in the Technical Press. These mishaps Mr. Tookey is inclined to attribute to the over-stressing of cranks and excessive heating

of pistons due to the tendency to overrate the permissible output of power from given cylinder dimensions. There was a case of a serious breakdown of a Diesel engine at Oxford in September last. It was a 650 B.H.P. engine, running at 240 revolutions per minute; but as it failed to give the guaranteed fuel consumption, it was reduced to 520 B.H.P., at 214 revolutions per minute. The breakdown occurred suddenly without any intimation of anything being wrong. It was a terrible smash; and the expert called in came to the conclusion that the failure was due to one of the bolts in the big end of the connecting-rod being of insufficient strength for the purpose. Another thing that has to be provided against is local overheating. Mr. G. E. Windeler states that in a well-designed Diesel engine, 40 per cent. of the heat units admitted to the combustion space is absorbed in useful work; of the remainder, 25 per cent. passes to the exhaust, and 35 per cent. to the circulating water, and is lost in radiation, &c. Consequently, very special means have to be adopted, in order to remove a considerable amount of heat. Any defect in the water circulation is liable to cause local overheating. Investigations have shown that most defects that have arisen in the cylinder covers and pistons of Diesel engines were due to serious deposits of salts in the water spaces, and that such deposits were not formed during times of working. The explanation is that the flow of water is generally stopped when the engine is stopped; and the heat remaining in the walls of the cylinder is sufficient to cause a deposition of salts to take place. In view of this the flow of water is continued for a time after an engine has ceased running. Mr. Windeler says that he has personally inspected one cylinder cover which contained a water space about 6 inches deep, and found a deposit of as much as 5 inches thick in the water space. On the question of seizures of pistons, these, according to the same authority, are almost invariably due to the heating of the piston pin and its bearing; and the seizures occur almost immediately after starting-up. Running the circulating water through the engine after shutting down tends to minimize the difficulty. The use of a hand lubricating pump by means of which lubricating oil under pressure can be pumped to all the bearings, including the piston pin bearing, while the engine is being barred round into its starting position, also to a large extent removes the difficulty.

The Secession.

The small band of "Point-Fives" has lost one of its members—Mr. H. F. Street, of Southampton—or rather he has become disqualified, for the 0·5d. per unit has no further place in his tariffs. This is no doubt an outcome of the report of Sir John Snell, in which, while he said that probably no harm had been done to the Corporation electricity undertaking by charging 0·5d. per unit for cooking and heating, he could not justify this charge standing alone. The Corporation have not, however, followed Sir John in his suggestion as to the adoption of the rateable value system, but have preferred to increase the flat-rates. The alterations made are as follows: For private lighting the charge for the first 50 units is to be 3½d. per unit, instead of 3d.; the charge for consumption above this amount remaining at 2½d. For business premises, the charge is to be increased from 3d. to 3½d. per unit; for supply outside the borough, 3½d. instead of 3d.; and for heating and cooking, whether inside or outside the borough, ¾d. per unit, instead of ½d. A simpler scale than at present in use for power purposes is to be drawn up. No alteration is to be made in public lighting or traction. We take it that Mr. Street's secession from the Point-Fives is not a voluntary, but a compulsory, act. However, voluntarily or compulsorily, the Association loses a member; and during the inevitable requiem at the next meeting, the sorrowing members may depend upon our sympathy.

Intrinsic Brilliancy and Luminous Efficiency.

The illuminating engineer professes obedience to the prescriptions of the physicist and the ophthalmist, when the prescriptions are of real scientific birth—the profession is made in print and in the lecture theatre of the Royal Society of Arts. Outside, some members of this group who happen to have electricity for sale claim by silent act that commercial expediency must have ascendancy over scientific principles, and so (when we are not at war with Germany) they fix, little more than man high, on the fronts of tobacco shops, the establishments of vendors of cheap jewellery, and other places where ordinary trading takes place, unshielded lamps of considerable intrinsic brilliancy; and rather than lose customers, they do the same in school rooms and in the home. They say it is not their fault that they have not the ideal light from the physiological point of view; and if people are so stupid as to go and damage their eyesight by the use of lamps of high brilliancy, without providing protection, they have only themselves to blame. These illuminating engineers are like the preacher who talks of ethical principles, and outside violates the whole chain of them. Dr. Herbert E. Ives has been dealing, before the American Electro-Chemical Society, with the subject of the ideal light; and it is clear from what he says, and from the fact that the "Electrical Review" puts a paragraph referring to the paper on the last page of its matter in a recent issue, that the "ideal light" is not one with the intrinsic brilliancy of the metallic filament electric lamp. Dr. Ives says the vacuum type of tungsten lamp is three hundred times as bright as the brightest object by day—viz., a white surface in the sun. The nitrogen filled tungsten lamp is a thousand times as bright. He urges the importance therefore of employing reflecting and diffusing media, in order to defend the vision. In his expert judgment a surface source of an intrinsic brilliancy of not more than 0·001 candle power per sq. cm. is required; and he believes a low intrinsic brilliancy is in great demand. From this, he turns to the subject of the efficiencies of modern illuminants, which he says are surprisingly low. Figuring from coal, 1 per cent. is the best figure obtainable to-day—light being only a small bye-product. Measurements made by Dr. Ives of the total luminous efficiency based on 50-candle power as the mechanical equivalent of light supply the following data:

	Luminous Efficiency of the Radiation, Per Cent.		Total Luminous Efficiency. Per Cent.
Four-watt carbon lamp	0·45	..	0·42
Vacuum tungsten lamp at 1·25 watts per candle	1·65	..	1·3
Nitrogen-filled lamp at 0·70 watt per candle	2·93	..	2·4
Welsbach mantle, 0·75 p. c. ceria	1·2	..	0·19
Open-flame gas-burner	0·19	..	0·036
Yellow flame arc	..	..	7·2

Please observe that Dr. Ives does not in this table use the expression "half-watt" lamp. He calls the example of that misnamed class a "nitrogen-filled lamp at 0·7 watt per candle."

Fire and Electricity Supplies.

The advocates of electricity plant concentration are constantly coming up against experiences which say "Don't." We have noted a few of them from time to time in the "Memoranda." Station fires have been among them—fires which have caused a discontinuance of the service to the trustful ones in large supply areas. The last example is the destruction by fire, on the 1st of the month, of the electric power station of the Ebbw Vale Steel, Iron, and Coal Company—the whole of the excellent plant being involved in the destruction, as well as the buildings. It is estimated that the number of men thrown idle is about 10,000. The District Council of Ebbw Vale purchase electricity in bulk from the Company; and so the domestic and public supplies (as well as that to the extensive works) were affected. For public lighting there are in use about 1100 50-candle power lamps. The station is a fair sized one, but, of course, it is a pigmy to the large concentrations of plant proposed for London. However, it illustrates a point of danger.

Electric Lamps and Fire-Raising.

A short time ago, mention was made in the "Memoranda" of a report issued by the London Fire Brigade regarding a fire that had been caused by the idiotic practice of complying with the police regulations as to shading shop lights by committing the premises to the danger of serving as a burning example of how not to do it. The Fire Brigade protested against the use of coloured paper shades in close contact with electric bulbs—they having been called to a shop that was alight from this cause. Mr. F. W. Willcox, of the British Thomson-Houston Company, some time ago called attention to the danger; and he has taken the opportunity of once more emphasizing it by special reference to the Fire Brigade's warning. While the Fire Brigade only specifically direct attention to one example, this does not mean that they have only been called to a single fire due to the stupid practice. The act of asking public attention to the matter evidences the concern of the Brigade. It is generally known there have been many shop lamp shades inflamed, and so were potential sources of conflagration. "Installation Topics" in "Electrical Times" says that even painted bulbs are dangerous, owing to the radiant heat being absorbed by the pigment. The so-called "half-watt" or gas-filled lamps are really more dangerous than the other tungsten filament lamps, owing to the higher temperature at which they have to be worked, and the inert gas acting as a conductor of heat. We have seen some flexibles connected to these gas-filled lamps which have become quickly discoloured, and this indicates the perishing of the insulation. However, the London Fire Brigade's warning is looked upon by the electrical papers as a good point with which contractors can go and probe shopkeepers into having their window lighting altered, by placing the lamps behind top screens, or in diffusing bowls.

Excess Lime Method of Water Purification.—The recently issued eleventh report on research work by Dr. A. C. Houston, the Director of Water Examination to the Metropolitan Water Board, is devoted mainly to a report on experiments on a practical scale with the excess lime method of purification of water. In previous reports the amount of lime required, under laboratory conditions of experiment, have been fully considered; and now useful information is given as to actual results on Thames water. These practical experiments were carried out at Sunbury, and dealt with a hard water; this spot being chosen because there were available there tanks and other facilities for carrying out the investigation at a reasonable cost. The material used was 3400 lbs. per million gallons of water of slaked and ground lime (calcium hydrate), containing 58 per cent. of calcium oxide. As the result of the investigation, Dr. Houston says no hesitation is felt in expressing the opinion that river water, no matter how impure, may be brought into a condition of absolute safety bacteriologically, and of great relative purity chemically, by means of lime.

COMPARATIVE WORKING RESULTS OF THE LONDON AND FOUR SUBURBAN GAS COMPANIES.

IN THE HALF YEAR ENDED JUNE 30, 1915.

Compiled by Mr. F. J. BRADFIELD, the Secretary of the Commercial Gas Company.

——	Gaslight and Coke.	South Metropolitan.	Commercial.	Brentford.	Wandsworth.	South Suburban.	Tottenham.
Gas sold . . . . . thousands	13,453,753	6,626,723	1,752,101	1,917,669	1,266,215	1,109,686	1,179,830
Increase . . . . . per cent.	Dec. 4·31	Dec. 3·73	2·23	1·65*e*	Dec. 0·81	0·06	1·50
Gas made per ton of coal . . . . cubic feet	13,044	12,180	14,019	12,103	13,426	13,010	12,811
„ „ per gallon of oil . . . . „	411	..	454	438	449	457	386
Gas unaccounted for . . . . . per cent.	5·42	3·26	6·80	4·15	5·56	3·39	6·38
Coke made for sale per ton of coal . cwt.	9·88	9·02	10·96	10·51	11·35	10·24	9 14
Tar made per ton of coal . . . . galls.	10·47	9·47	11·20	13·68	10·47	9·59	..
Liquor made per ton of coal . . . galls, 8 oz.	38·09	40·56	38·98	35·83	36·53	36·79	38·52
Percentage of coke used as fuel	20·06	26·64	12·28	15·09	9·17	21·54	24·70
Capital expended per 1000 cubic feet sold during the past year	s. d. 11 1·82	s. d. 8 4 00	s. d. 8 6·76	s. d. 7 0·92*f*	s. d. 7 7·41	s. d. 9 10·69	s. d. 8 9·24
Price charged per 1000 cubic feet	2/8 to 3/- 2/4 to 2/10	2/4 and 2/10	2/4 and 2/8	2/4 to 3/6	1/9 to 3/1	2/5 to 4/2 2/10 to 4/7	2/- and 2/8
Costs per 1000 Cubic Feet of Gas Sold.							
REVENUE ACCOUNTS.	d.	d.	d.	d.	d.	d.	d.
Coals, oil, &c.	15·73	21·45	15·54	16·29	16·20	19·84	16·62
Less residuals—Coke and breeze	5·11	7·66	4·46	4·29	5·56	7·74	4·58
Tar	1·27	1·82	1·20	1·26	1·26	1·41	1·29
Amm. liq. and sulph. amm.	1·46	2·23	1·46	1·03	1·23	1·70	0·86
Total residuals . . .	7·84	11·71	7·12	6·58	8·05	10·85	6·73
Net for coals, oil, &c.	7·89	9·74	8·42	9·71	8·15	8·99	9·89
MANUFACTURE—							
Salaries	0·28	0·69	0·47	0·50	0·32	0·59	0·30
Wages—carbonizing	1·58	1·82	1·51	1·46	1·77	1·28	1·31
Purification	0·23	0·69	0·14	0·18	0·16	0·11	0·28
Repairs—plant	4·28	3·65	3·39	2·86	4·01	4·52	3·21
Net manufacture . .	14·26	16·59	13·93	14 71	14·41	15·49	14·99
DISTRIBUTION—							
Wages and salaries	1·10	0·79	0·82	1·04	1·32	1·47	0·90
Repairs—Mains and services, &c.	1·61	1·17	1·34	1·51	2·51	1·86	2·57
„ Meters and prep. meters and fittings	1·83	1·82	2·01	0·99	0·88	2·15	1·79
„ Stoves—ordinary and prepayment .	1·75	1·00	1·52	1·59	1·43	1·82	1·24
Total net manufacture and distribution .	20·55	21·37	19·62	19·84	20·55	22·79	21·49
Public lamps—lighting and repairing	0·46	0·52	0·35	0·40	0·48	0·68	0·37
Rents, rates, and taxes	3·13	2·06	2·42	1·96	1·15	1·86	2·02
MANAGEMENT—							
Directors, Auditors, and salaries (Secretary, &c.)	0·24	0·27	0·33	0·45	0·54	0·77	0·48
Collectors	0·50	0·64	0·73	0·50	0·46	0·54	0·46
Stationery and general charges	0·24	0·60	0·45	0·30	0·47	0·32	0·38
Profit-sharing	0·23	0·66	0·37	..	0·50	0·62	0·69
Bad debts	0·13	0·08	0·04	0·09	0·07	0·05	0·04
Law and parliamentary charges	0·01	0·05	0·01	0·11	0·00	0·03	0·03
Superannuations, &c.	0·49	0·44	0·34	0·49	0·39	0·56	0·36
National Insurance	0·07	0·07	0·07	0·06	0·08	0·07	0·07
Active service allowances and war bonus . .	0·13*b*	0·64	..*a*	0·83	0·94	0·56	0·69
Sundries	0·04	0·03	0·01	0·00	0·00	..	..
Total expenditure (*less* residuals) . . .	26·22	27·43	24·74	25·03	25·63*h*	28·85	27·08
GAS	33·09	29·50	28·68	28·37	26·44	33·78	25·00
Rentals—Meters and prep. meters and fittings	2·88	3·34	2·92	3·95	2·76	2·24	1·96
Stove	1·38	1·38	1·75	1·13	2·30	1·67	3·91
Incand. mantle maintenance . . .	..	..	0·11	..	0·14	..	0·12
Miscellaneous	0·11	0·06	0·00	0·01	0·06	0·08	0·04
Total—Gas, rentals, &c.	37·46	34·28	33·46	33·46	31·70	37·77	31·03
Balance, being profit	11·24	6·85	8·72	8·43	6·07	8·92	3·95
Dividend and interest	9·90	6·50	8·12	7·03	6·68	7·28	6·11
Surplus	1·34	0·35	0·60	1·40	Def. 0·61	1·64	Def. 2·16
Contributions to funds and sundry payments .	0 42*c*	0·22*d*	..	2·64*g*	0·36*i*	0·59*j*	0·05*k*
SUNDRIES.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Coals cost per ton	19 4·35	20 9·57	19 4·91	..	18 11·69	..	19 0·38
Coke realized per ton of coal	6 11·06	7 1·41	7 3·12	6 10·52	7 10·11	9 11·28	6 6·46
Coke „ „ of coke	14 0·23	15 9·37	13 2·90	13 0·97	13 9·78	19 5·02	14 3·63
Breeze „ per ton	5 10·49	5 8·65	4 0·92	4 11 65	1 10·84	..	1 9·88
Tar realized per gallon	0 2·21	0 2·24	0 1·82	0 1·59	0 1·90	0 2·28	0 1·60
Amm. liquor, &c., realized per butt (8 oz.) . .	6 3·61	5 8·99	6 9·90	5 1·37	5 3·92	6 5·43	3 6·35
Percentage of stoves at rental to consumers . .	81	98	70	79	90	96	67
Bad debts per cent. on total receipts.	0·28	0·18	0·10	0·23	0·18	0·11	0·10
Net profit per cent. on ordinary capital . . .	5·12	4·70	5·28	6·85	4·84	6·23	3·09*l*
One penny variation equals in half year . . .	£56,057	£27,611	£7300	£7990	£5276	£4624	£4916
Carb. water gas, per cent. on total make . . .	33·32	..	36·72	42·17	29·10	19·62	32·66

a ·87 Included with Wages items. *b* On Active Service only. *c* Writing-down Consols and to Reserve Fund. *d* To Insurance Fund. *e* On Amalgamated Companies' figures. *f* On Half-Year's figures. *g* Compensation to Directors and Stamp Duty. *h* Capital Duty eliminated. *i* Capital Duty. *j* Special Purposes Fund. *k* Loss on Electricity Accounts. *l* Including Electricity Results.

New Lighting Order for London.—The Metropolitan and City Police have issued a new lighting order for London, which has now come into force. All the provisions of the previous orders as to reduced lighting are retained; and the hours affected are: From 8.30 p.m. till sunrise during August; from 7.30 p.m. till sunrise during September; from 6 p.m. till sunrise during October, and until further notice. The lighting-up hour for all vehicles is changed. Instead of the front and rear lamps being lighted, as hitherto, at one hour after sunset, lamps must, until further order, be lit half-an-hour after sunset; and all vehicles travelling in the public streets must continue to show their lights till half-an-hour before sunrise.

COMPARATIVE WORKING RESULTS OF THE LONDON AND FOUR SUBURBAN GAS COMPANIES.

TABLE SHOWING THE VARIATION, INCREASE OR DECREASE, ON FIGURES OF CORRESPONDING HALF YEAR, 1914.

[The figures in heavy type show the decreases.]

Compiled by Mr. F. J. BRADFIELD, the Secretary of the Commercial Gas Company.

	Gaslight and Coke.	South Metropolitan.	Commercial.	Brentford.	Wandsworth.	South Suburban.	Tottenham.
Gas sold . . . . . thousands	**605,701**	**257,105**	38,250	124,322*	**10,392**	657	17,483
Increase (variation equal to) . . . . per cent.	**6·19**	**6·02**	·55	**5·77**	**8·73**	**7·24**	**4·19**
Gas made per ton of coal . . . . cubic feet	677	**296**	264	64	545	41	**337**
,, ,, per gallon of oil . . . . ,,	**31**	..	7	**5**	**38**	44	**71**
,, unaccounted for . . . . . per cent.	**2·10**	·74	·14	·04	**1·82**	·11	1·04
Coke made for sale per ton of coal . cwt.	·06	·39	**·07**	·30	·96	**·25**	**·25**
Tar made per ton of coal . . . . galls.	·04	**·10**	·30	3 41	·31	·17	..
Liquor made per ton of coal . . . galls, 8 oz.	1·15	**·60**	·03	**·60**	**·12**	**·57**	1·02
Percentage of coke used as fuel	**·61**	**3·41**	·55	**3·22**	**7·67**	2·22	·35
Capital expended per 1000 cubic feet sold during the past year	s. d. 0 5 27	s. d. 0 6·03	s. d. 0 1·45	s. d. 0 0·05	s. d. 0 5·12	s. d. 0 2·65	s. d. 0 1·44
Price charged per 1000 cubic feet†	0 6·00	0 8·00	0 4·03	..	0 4 00	0 7 00	..
Costs per 1000 Cubic Feet of Gas Sold.							
REVENUE ACCOUNTS.	d.	d.	d.	d.	d.	d.	d.
Coals, oil, &c.	·02	6·24	·21	1·40	**1·16**	1·72	·56
Less residuals—Coke and breeze	**·60**	2·12	·18	**·01**	**·48**	1·92	**·40**
Tar	**·46**	**·06**	**·20**	**·06**	**·59**	**·35**	·01
Amm. liq. and sulph. amm .	**·49**	**·11**	**·19**	·17	**·42**	·06	**·50**
Total residuals . . .	**1·55**	1·95	**·21**	·10	**1·49**	1·63	**·89**
Net for coals, oil, &c.	1·57	4·29	·42	1·30	·33	·09	1·45
MANUFACTURE—							
Salaries	·01	·02	·04	·06	·08	**·03**	·03
Wages—carbonizing	**·08**	·08	·08	·03	·11	·04	**·36**
Purification	**·02**	·03	**·08**	**·06**	**·11**	·02	**·01**
Repairs—plant	·08	**·70**	**·11**	**1 07**	**·15**	2·14	·21
Net manufacture . .	1·56	3·72	·35	·26	·26	2·26	1·32
DISTRIBUTION—							
Wages and salaries.	·05	·01	**·02**	**·07**	·07	·07	**·14**
Repairs—Mains and services, &c. . . .	**·09**	**·35**	**·08**	**·80**	·37	**·71**	**·52**
,, Meters and prep. meters and fittings	·08	**·75**	**·07**	**·05**	**·23**	**·74**	**·16**
,, Stoves—ordinary and prepayment .	·07	**·56**	**·18**	**·16**	**·29**	·56	**·05**
Total net manufacture and distribution .	1·67	2·07	0·00	**·82**	·18	1·44	·45
Public lamps—lighting and repairing	·01	**·06**	**·09**	**·04**	**·05**	**·21**	**·02**
Rents, rates, and taxes	·14	·18	·00	·12	·11	**·06**	·02
MANAGEMENT—							
Directors, Auditors, and salaries (Secretary, &c.)	·01	·00	·01	·03	**·04**	·05	**·02**
Collectors	·04	·05	·03	·00	·02	·04	·00
Stationery and general charges	**·01**	**·02**	**·01**	**·01**	**·08**	**·06**	**·14**
Profit-sharing	**·16**	**·36**	**·14**	..	**·03**	**·15**	**·01**
Bad debts	·05	·02	**·01**	·02	·03	·02	·01
Law and parliamentary charges	**·05**	·03	**·05**	**·21**	**·01**	**·09**	·00
Superannuations, &c.	·02	·16	·01	·01	**·01**	**·07**	·00
National Insurance	**·01**	**·05**	**·01**	**·01**	**·01**	**·01**	·00
Active Service Allowances and War Bonus .	·13	·64	..	·83	·94	·56	·69
Sundries	·00	·00	**·01**	·00	**·01**	..	·00
Total expenditure (*less* residuals) . . .	1·84	2·66	**·27**	**·08**	1·04	1·46	·98
GAS	3·66	3·41	1·25	·24	1·27	3·49	**·17**
Rentals—Meters and prep. meters and fittings	·07	·01	·10	·49	**·01**	**·13**	·02
Stove	·14	·05	·05	·11	·17	·06	**·10**
Incand. mantle maintenance . . .	..	..	·00	..	**·32**	..	**·04**
Miscellaneous	·01	·01	**·01**	·00	**·03**	**·02**	**·13**
Total—Gas, rentals, &c.	3·88	3·48	1·39	·84	1·08	3·40	**·32**
Balance, being profit	2·04	·82	1·66	·92	·04	1·94	**1·30**
Dividend and interest	**·47**	**·85**	**·89**	**·22**	**·22**	**1·03**	·01
Surplus	2·51	1·67	2·55	·70	**·18**	2·97	**1·31**
Contributions to funds and sundry payments .	·16	·22	..	2·64	·co	·59	**1·95**
SUNDRIES.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Coals cost per ton	2 6·65	5 6·89	1 9·04	..	1 3·29	..	0 1·59
Coke realized per ton of coal	0 3·49	1 10·50	1 0·15	0 0·53	1 3·79	3 4·63	**0 1·54**
Coke ,, ,, of coke	0 6·25	3 7·64	1 11·00	**0 3·57**	1 3·09	6 11·03	0 1·31
		Per Yard.				Per Yard.	Per Chal.
Breeze ,, per ton	1 7·30	..	0 9·65	1 9·73	0 6·76	..	..
Tar realized per gallon	**0 0·28**	**0 0·12**	**0 0·22**	**0 0·37**	**0 0·43**	**0 0·30**	**0 0·56**
Amm. liquor, &c., realized per butt, 8 oz. . .	**0 9·99**	**0 4·72**	**0 1·42**	1 0·42	**0 0·40**	1 0·01	**1 10 28**
Percentage of stoves at rental to consumers . .	4	**2**	3	..	..	5	6
Bad debts per cent. on total receipts	·09	·03	**·03**	·05	·08	·04	·03
Net profit per cent. on ordinary capital . . .	1·09	·41	1·20	..	**·84**	1·46	**1·60**
One penny variation equals in half year . . .	**£2524**	**£1071**	£159	£518	**£43**	£3	£73
Carb. water gas per cent. on total make . . .	8·60	..	5·73	1·04	18·14	9·40	6 70

* This figure represents the variation on the absorbing Company's own figures, and not on those of the amalgamating Companies, whereas on the preceding table the increase on the "Gas Sold" is on the amalgamated figures.

† These figures show the increases in price in the Companies' principal areas.

Gas Consumption in Germany.—The statistics collected by the Central Gas Publicity Organization of Berlin show that the gas made by 831 German works last May was 2·4 per cent. less than the quantity made by the same works in May, 1914. For similar figures for earlier months since the outbreak of the war, see the "JOURNAL" for the 27th ult., p. 186.

ILLUMINATING ENGINEERING SOCIETY OF AMERICA.

A preliminary programme has now been issued for the ninth annual convention of the Society—to be held in Washington, from the 20th to the 22nd prox. The last issue of the "Transactions" of the Society points out that the papers, which promise to be of an unusually high standard, are to be distributed over ten sessions. One of the sessions will be devoted especially to the subject of street lighting; while commercial, general, and laboratory papers will each be given three sessions. Inspection trips, a reception, and a banquet are among the entertainment features.

After the formal opening of the proceedings and an address of welcome to Washington, the President's address and reports of Committees on Lighting Legislation, Nomenclature and Standards, and Progress will occupy the morning sitting of the first day. The subsequent proceedings will include the following papers to be read in the four sections above referred to:—

General Session.

Tests and Experiments in Connection with the New Commonwealth Edison Company Building—Ship Lighting—Illumination Efficiency as Obtained in an Experimental Room—Photometry with Portable Instruments—New Test Plate for Illumination Photometers—Incandescent Lamp Testing and Photometry—Street Lighting—Artificial Illumination in Practical Photography—Photographic and Visual Illumination Efficiencies—Production and Application of Ultra-Violet Light—A Flux Method of Obtaining Average Illumination.

Street Lighting Session.

Gas Street Lighting—Arc Lamps for Street Illumination—New Types of Incandescent Lamps and their Relation to the Street Lighting Problems—Ornamental Street Lighting.

Commercial Session.

How to Attack a Lighting Problem—How can a Combination Gas and Electric Company Render the Best Services to Customers?—Small Incandescent Lamps and Special Illumination Problems—Lighting of Office Buildings—Flame Pilot Ignition of Incandescent Gas-Lamps—Practical Illumination as Exemplified by Some Recent Installations of Incandescent Gas-Lamps—Mercury Arc Lamps for Industrial Lighting—Relation between Proper Illumination and Accident Prevention—Artificial Illumination of Interiors—Lighting of State, War, and Navy Buildings—Lighting of Gymnasiums and Armories with Incandescent Lamps.

Laboratory Session.

Crova's Method of Coloured Light Photometry Applied to Modern Incandescent Illuminants—Differences in Threshold and Acuity Variations—Visual Efficiency—Yellow Screens—Retinal Sensibilities in Relation to Illuminating Engineering—Effect of Distribution of Light on Muscular Control—Effect of Various Wave-Lengths of Radiation on Eye Cataract—Effect of Surrounding Gas on an Incandescent Filament—Parabolic Mirror.

A STUDY OF BOILER LOSSES.

This was the subject of a "Bulletin" recently issued by the University of Illinois. The tests were undertaken to permit of a detailed study of the boiler and furnace losses of the new power plant installed at the University, under varying loads, depth of fuel bed, &c.

The fuel used throughout was coal, in most cases freshly mined, but in some cases weathered coal was employed. The boiler on which the tests were run is one of a battery of two Babcock and Wilcox boilers. The boiler drum is 42 inches by 20·3 feet, and contains eighteen sections of 4-inch tubes, 18 feet long; each section with fourteen tubes. The distance from the floor to the first row of tubes is 8 ft. 6 in. at the front end. The style of baffling adopted differs from the standard, inasmuch as the construction provides a tile roof over the furnace and makes the attainment of a long combustion chamber possible. The first pass for the gases is thus at the rear of the setting, and they are discharged into a breeching at the front instead of at the back of the boiler, as in the standard type. The effective length of grate is 9 ft. 6 in., and the area of grate surface 90 square feet.

The analysis of the fresh coal, as fired, was as follows:—

Fixed carbon, per cent.	30·2 to 45·4	proximate
Volatile matter, ,,	29·1 ,, 40·7	
Moisture, ,,	12·4 ,, 22·0	
Ash, ,,	10·4 ,, 20·2	
Sulphur (determined separately)	1·3 ,, 4·3	
Carbon, per cent.	58·9 ,, 69·0	ultimate
Hydrogen, ,,	3·5 ,, 5·3	
Oxygen, ,,	4·5 ,, 13·4	
Nitrogen, ,,	1·1 ,, 2·5	
Sulphur, ,,	1·6 ,, 5·2	
Ash, ,,	12·6 ,, 23·8	

From a study of the numerous tables and curves with which the text is illustrated it is concluded that the over-all efficiency of the unit tested, under the average conditions which prevailed during the tests, and when developing in the neighbourhood of 550 boiler horse power, is about 64 per cent.

For the coal used, Mission Field screenings, the best thickness of fire was found to be 7 or 7½ inches, depending on the amount of fine material in the coal. The maximum capacity developed was 768 boiler horse-power. This was obtained from pea coal with a 7-inch fuel bed and a draught over the fire of 0·375 inch of water.

The best rate of carbonization approximates 26 lbs. of dry coal per square foot of grate surface per hour. The draughts over the fire required to give this rate are as follows: 0·18 inch water for a 6-inch fire, 0·22 inch for a 7-inch fire, 0·29 inch for an 8-inch fire, and 0·52 inch for a 9½-inch fire. The greatest losses were due to combustible in the ash, excess air, and air leakage. The smallest loss was that due to the formation of carbon monoxide.

With the exception of the air leakage loss, which can be practically eliminated without affecting any of the others, the rest of the losses are to some extent interrelated; and there are certain well-defined limits within which the excess air must be maintained in order to reduce the others to a minimum. This is approximately 30 to 40 per cent.

The sum of the excess air loss, and the loss due to combustible in the ash, was nearly constant. It amounted to about 14 per cent., and a decrease in one source of loss could be accomplished only by an increase in the other. Hence the formation of carbon monoxide was the factor having the greatest bearing on the extent to which excess air could be reduced. The latter could be decreased until carbon monoxide appeared in excess.

The percentage of carbon dioxide depends to some extent on the attention required by the fire. It was low in the tests during which the side door had to be frequently opened in order to allow barring and raking of the fire. The form of baffling adopted makes the maintenance of high furnace temperatures possible, and reduces the amount of smoke formed.

DETERMINATION OF THE CALORIFIC VALUE OF GAS.

In a recent number of "Gas und Wasser," Herrn H. Strache and E. Glaser describe a simple and accurate method of determining the calorific value of small quantities of gas by means of the Junkers calorimeter. The formula is only applicable to coal gas and mixtures of coal gas and carburetted water gas, where the room temperature is 3° or 4° C. higher than the inlet water to the calorimeter, with a gas rate from 3·4 to 4·4 cubic feet (96 to 126 litres) per hour, and provided also that the CO_2 produced by the combustion of 1 cubic foot of such gas does not exceed 0·48 cubic foot.

The gas is supplied to the calorimeter from a large measuring bottle—being displaced by the water flowing from the calorimeter. This latter water enters first a Woulff's bottle to allow of the escape of any air carried with it.

The formula is as follows:

$$\text{Gross value} = \frac{t_D}{p}\,1{\cdot}01 + 64 - H.$$

$$\text{Net value} = \frac{1{\cdot}01}{p}\left(t_D - \frac{597d}{V_D}\right) - 10.$$

where

t_D is the rise in temperature of the water flowing through the calorimeter.

p is the tabular number for temperature and pressure.

H the hygrometer reading.

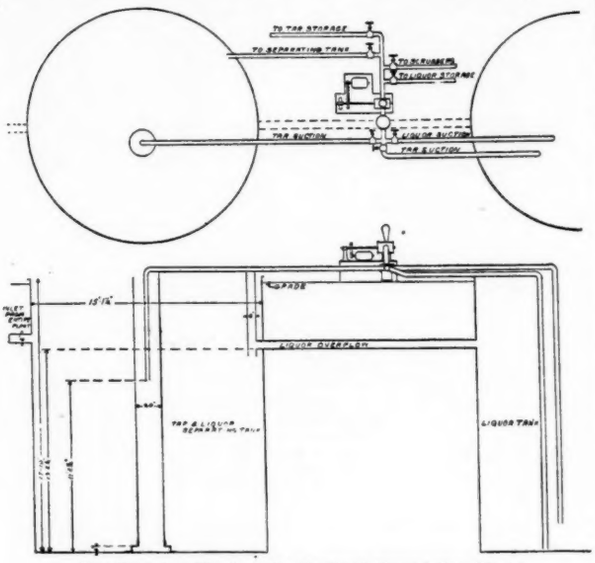
d is the quantity of condensed water from the combustion of V_D litres of gas.

New Nitrogen Factory in Norway.—At the Björlva waterfall, Norway, a new factory is, says "Engineering," to be erected for the manufacture of sulphate of ammonia and cyanamide. Arrangements have already been made to dispose of the output of the latter product for a period of five years. The annual output of sulphate of ammonia will be about 6000 tons. The matter is being supervised by a Committee of four experts, who are at present in Sweden to study the new method of manufacture.

Possibilities of Ammonia Production in Australia.—Pointing out the advisability of the Victorian Government encouraging the production of ammonia from the huge deposits of brown coal in that part of the world, a writer in the "Australian Mining Standard" says: "The vast stores contained in the almost inexhaustible deposits of brown coal have been hitherto entirely neglected. Brown coal is fairly rich in ammonia. It is computed that every ton of this coal contains approximately 3s. 8d. worth of ammonia; and when it is considered that the cost of getting the coal in some parts of Victoria does not exceed 1s. 6d. per ton, the profit upon the work is evident. No emphasis is here laid upon the other possibilities—viz., coal gas, tar, pitch, and creosote, nor upon the 50 or 60 per cent. of residual carbon. For the production of ammonia alone the Government and people of Victoria should, without delay, address themselves to the destructive distillation of brown coal—the State Government particularly, as being the administrators, under the Crown, of those estates which are known to contain this remarkable wealth."

TAR PUMPING.

The General Manager of the Hartford (Connecticut) Gaslight Company, Mr. B. W. Perkins, gives in the "American Gas Institute News" some particulars of a successful plan he employs for pumping tar from the separating tank into storage without loss of ammoniacal liquor. The tar and liquor from the entire plant are run into the first tank, the overflow from which runs into a second



Tar Pumping Plant at the Hartford (Conn.) Gas-Works.

tank of about the same size. In the first tank a 20-inch pipe with three legs, 5 inches long, is placed at any convenient point, and inside this is placed the suction from the tar-pump at such a height from the bottom that the pump will lose its suction before the tar reaches the end of the 20-inch pipe. The length of the suction pipe can be found by experiment or measurement.

If a tank is nearly full of tar it will take several days to bring it down to the proper level, as levels have to be re-established by incoming liquor; but as pumping is done at regular periods it can be kept at the proper level thereafter. As there is always an emulsion of tar and liquor on the top of the tar, the suction pipe should be short enough not to remove any of this.

With this plan, it is impossible to pump any ammoniacal liquor with the tar, as often happens from inattention, or from a wrong measurement of the tanks before pumping.

American Chemical Society.—A feature of the fifty-first meeting of the Society, to be held at Seattle (Washington), will be two symposiums by the Industrial Division, one a general symposium especially devoted to the progress of chemistry in special lines of chemical industry. Papers have been promised pointing out the influence of the chemist upon various industries, and his accomplishments therein, including iron and steel, petroleum, and illuminating gas. A symposium will also be held on the Distillation of Wood.

Natural Gas Charges in America.—The Public Service Commission of the State of New York have made an order approving the stipulation settling the complaint as to rates of the Trustees of the village of Perry against the Pavillion Natural Gas Company. The Commission authorize a new schedule putting in force discounts, the refusal of which by the Company brought about the complaint. The new schedule provides a rate of 40 c. per 1000 cubic feet, off which the Company will give discounts, upon payment by a stipulated date, ranging from 5 c. to 12½ c. per 1000 cubic feet, according to the amount of gas used. This arrangement will remain in force for one year.

Munitions Inventions Branch.—The Minister of Munitions has constituted a Munitions Inventions Branch of the Ministry, and has appointed as Comptroller Mr. E. W. Moir, M.Inst.C.E., M.Am.Soc.C.E. The branch, which for the present is located in Armament Buildings, Whitehall Place, will have the duty of considering projects for inventions relating to munitions for warfare on land or matters appertaining thereto. The Comptroller and staff of the branch will be assisted in their work of examination, and, if thought necessary, in the investigation and development of any projects that may be considered worth being developed, by a panel of honorary scientific and other experts. Among those who have accepted Mr. Lloyd George's invitation to act on this panel may be mentioned Mr. Horace Darwin, M.A., F.R.S., the Chairman of the Cambridge Scientific Instrument Company, Mr. A. M'D. Duckham, Dr. Sebastian Z. de Ferranti, Professor Glazebrook, F.R.S., Professor J. S. Haldane, F.R.S., Sir Alexander Kennedy, F.R.S., Professor Vivian B. Lewes, Mr. W. H. Maw, M.Inst.C.E., Mr. James Swinburne, F.R.S., Sir J. J. Thomson, F.R.S., and Mr. A. J. Walter, K.C.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Dutch Mantle Manufacture.

SIR,—In the "JOURNAL" for the 27th ult., Mr. Engel, the Managing-Director of the Gautzsch Company, of Amsterdam, makes a number of very interesting statements about the history and aspirations of his Company; but we think your readers will agree that the statements which he carefully does not make are likely to be much more illuminating than what he actually does say. For instance, it is of great interest to us, and other of your readers concerned in the doings of the German Mantle Trust, to know that Mr. Gautzsch is supplying a large number of the pre-war customers of the German Auer Company, and that he is sending to them goods which are practically identical in all respects with what they received before the war.

Mr. Engel is also fortunate in having (as we understand from good authority that he has had) the assistance and advice of Messrs. Schwartz, Feuer, and Hirsch in the conduct and arrangements of his Dutch factory. We are to understand also that it was from a purely philanthropic motive that these gentlemen from the Auer Company loaned to him a number of machines and German girls to demonstrate to his Dutch employees. We should be glad if we could obtain another such hundred super-Dutch girls as those Mr. Engel has, to manufacture here the same quantity of mantles as he is able to turn out from the Amsterdam factory. They would be of more use to us, judged by the quantity of mantles that he has already sold in England, than the six hundred of our present staff.

With regard to the statements that the Home Office have approved a list of Dutch shareholders in the Gautzsch concern, we would insinuate that another Government Department—namely, the India Office—was hoodwinked by the Auer Company in connection with the Travancore Minerals Company, where the holding of the Auer Company was, as we pointed out in September last, and has since been proved to the satisfaction of H.M. Government, three-quarters of the entire capital, although apparently all was held in British hands.

We have, unfortunately, not sufficient evidence to enable us to state with regard to Messrs. Gautzsch that they are in the same position as the Travancore Minerals Company; but with regard to their pure Dutch origin we "ha'e oor doots."

If the Auer Company are really not holders, through Dutch nominees, of shares in the Gautzsch Company, perhaps Mr. Engel will enlighten your readers as to the exact relations—intimate as we know them to be—between the two concerns.

CHARLES S. GARLAND,
Works Manager of the Volker Lighting Corporation, Limited.

Garratt Lane, Wandsworth, Aug. 16, 1915.

Badges for Gas-Works' Employees.

SIR,—With further reference to the question of the issue of private badges to gas-works' employees, which has already been approved by the War Office, I have received a letter from the Ministry of Munitions of War in the following terms:—

Aug. 9, 1915.

"With further reference to your letter of the 30th of July, I have to inform you that private badges approved by the War Office or Admiralty may be continued to be used in conditions set forth in par. 8 of the enclosed rules. I may add for your information, however, that the Ministry of Munitions will in due course offer to substitute the official badge for the use of skilled and semi-skilled indispensable workmen of certain occupations employed by those firms who have distributed approved private badges to their employees."

Par. 8 of the Munition (War Service Badges) Rules referred to reads as follows:—

"Any person to whom before the date of these rules [July 23] any badge was issued by or with the express authority of the Admiralty or Army Council may—anything in these rules to the contrary notwithstanding—continue to wear such badge so long as he remains in his present employment, until such date, not being earlier than the 30th of September, as the Minister may determine, either generally or in any particular case or class of cases."

W. T. DUNN, Secretary,
Institution of Gas Engineers.

39, *Victoria Street, S.W.*,
Aug. 12, 1915.

Rossendale Union Gas Company.—The report of the Company for the half year ended June 30 refers to the loss sustained by the death of Mr. H. W. Ashworth, who was a Director for 25 years, and Vice-Chairman for nine years. The sales of gas showed a decrease of 4·36 per cent. on the corresponding period of 1914. The statutory dividends, ranging from 10 per cent. on the original shares to 5 per cent. on the new preference shares, are recommended. Sales of gas realized £15,885, and residual products £4670. The profit was £5386.

Market Drayton Public Lighting.—The Local Government Board have forwarded to the Market Drayton Urban District Council a copy of a letter received by them from a ratepayer asking for an inquiry "concerning the unnecessary increase in the rates of the town through an extra expenditure being incurred for installing electric light in the street-lamps, in place of the well-illuminated gas-lamps which now exist." The letter added that the amount would be between £300 and £400, which would mean a 1d. rate. In reply, the Clerk pointed out that the writer was an employee of the Gas Company, "whose tender had not been accepted." He remarked that the Council had received many expressions of dissatisfaction with the gas lighting, and that a clear saving would be effected by the acceptance of the tender of the Electric Light Company.

REGISTER OF PATENTS.

Bunsen Burner Apparatus.

WELSBACH LIGHT COMPANY, LIMITED, of Grays Inn Road; a communication from the Deutsche Gasglühlicht Actien-Gesellschaft (Auergesellschaft), of Berlin.

No. 27,955; Dec. 4, 1913.

For the heating of flat irons, soldering irons, &c., which are continually being moved while in use, the employment of a bunsen burner, the patentees state, has the disadvantage that the motion interferes with the suction process effected by the jet of gas issuing from the nipple—the result being that both combustion and heating are irregular.

The aim of the present invention is to overcome such difficulties by providing, independently of the burner proper, a mixing chamber in which a nozzle supplied with compressed air is arranged adjacent to the gas supply; and this supplies a part only of the air required. By means of the motion of this air current, the remaining air necessary is sucked in, mixes with the gas, and passes through a flexible tube to the burner proper, where combustion takes place. The regulation of the flame is effected by the compressed air and the gas being led into the same cock, and from this into the mixing chamber.

Manufacture of Ammonium Sulphate.

JOHNSON, J. Y.; a communication from the Badische Anilin und Soda Fabrik, of Ludwigshafen on-Rhine, Germany.

No. 27,962; Dec. 4, 1913.

In their specification, the patentees remark that it is known that by treating calcium sulphate (for instance, gypsum) with either a dilute or a concentrated solution of ammonium carbonate, or of ammonium bicarbonate, double decomposition takes place, resulting in the formation of ammonium sulphate and calcium carbonate. In cases in which ammonium bicarbonate is used, it may be necessary to complete the decomposition of the calcium bicarbonate formed—for instance, by heating the mixture. Hitherto this simple reaction has been but little used owing to the difficulty of separating the fine precipitated calcium carbonate from the ammonium sulphate solution and of completely recovering the ammonium sulphate from the calcium carbonate mud. The methods of filtering—making use of apparatus (such as filter presses and the like) which have hitherto been used for analogous separation purposes—have proved but of little value, because large quantities of water are required in such apparatus for washing the finely divided precipitate, and the cost of subsequent evaporation is consequently too high; and, further, the calcium carbonate is unevenly and incompletely washed out, so that some ammonium sulphate is lost.

What the patentees claim as their invention is: (1) The manufacture of ammonium sulphate practically free from calcium salt by treating calcium sulphate with ammonium carbonate or bicarbonate in the presence of water, then filtering the solution so that the carbonate sets on the filtering surface in a continuous adherent layer of uniform permeability, and then washing the layer of carbonate with water until it is practically free from ammonium sulphate. (2) The manufacture of ammonium sulphate practically free from calcium salt, by treating calcium sulphate with ammonium carbonate or bicarbonate in the presence of water, then dipping into the suspension obtained a hollow frame or box, having at one (or more than one) of its sides a filtering membrane or its equivalent, placing the inside of the frame or box under less pressure than the outside, and drawing off from inside the frame or box liquid which passes through the membrane, then surrounding with water the frame or box and the calcium carbonate adhering to it, and then continuing to apply reduction of pressure at the inside of the frame or box until the calcium carbonate has been sufficiently freed from ammonium sulphate.

Obtaining Ammonia from Solid Fuel.

SACHS, D. K., of Berlin.

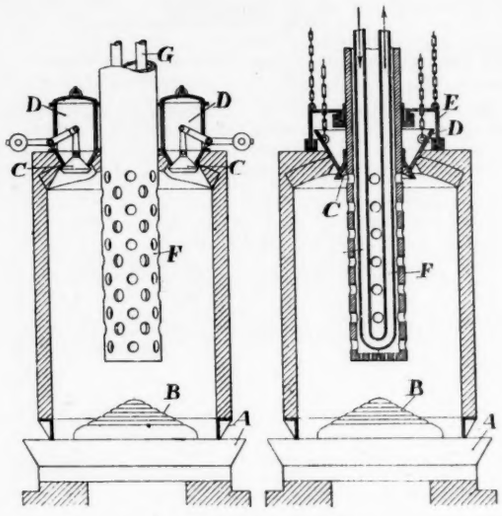
No. 28,735; Dec. 12, 1913. Convention date, Dec. 12, 1912.

This invention relates to a process for increasing the yield of ammonia in the gasification of solid fuels by discharging the whole of the gases from the interior of the fuel bed immediately at the point of their generation, through pipes, the temperature of which is reduced by cooling devices, so that the gases entering therein are no longer decomposed. The pipes have arranged in the interior separate cooling pipes through which a constant current of water is caused to pass. With such cooled discharge pipes it is said to be possible to obtain up to 90 per cent. of the nitrogen of the fuel in the form of ammonia.

The use of a central tube has already been proposed, the patentee remarks, in gas-producers for drawing-off the generated gas from the centre of the producer, which tube was provided with cooling devices; but as the discharge tube had openings only in the region of the upper layer of fuel, it was not adapted to draw off any ammonia produced, since the latter would be liable to decompose on the way to the discharge openings—the cooling devices thus serving not for obtaining ammonia, but for utilizing the heat contained in the discharged gases.

Two constructions according to the invention are illustrated. The cooled pipe is shown in the first in elevation and in the second in section; but it is of the same construction in both. For the rest, the two differ from each other as regards the charging devices. In No. 1 the generator casing is provided in the usual manner with a water seal A and a conical grate B. Two charging devices are provided consisting of closing cones C and charging hoppers D. In No. 2, on the contrary, there is a single charging device provided with a bell E in addition to the closing cone C and the adjustable charging hopper D.

A pipe F with holes is inserted into the generator casing with a cooling coil G in the interior. The ammonia-containing gases generated in the interior of the fuel pass in a nascent state through the holes into the pipe F, in which they are at once cooled by the coil to such an extent that their temperature is below the decomposition temperature of ammonia; so that the ammonia contained in the gases, as soon as they have reached the pipe F, can no longer be decomposed.



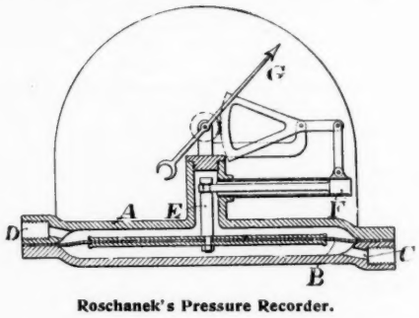
Sachs' Ammonia Recovery Plant.

Indicating and Recording Differences of Pressure.

ROSCHANEK, O., of Vienna.

No. 9738; April 20, 1914. Convention date, April 21, 1913.

This invention has for its object to provide a device for accurately determining small differences of pressure between two quantities of fluid as distinguished from devices in which the pressure of a fluid is measured against the atmosphere pressure within the instrument. The appliance consists of two chambers each in connection with a fluid supply separated by a diaphragm, so arranged that any difference of pressure on the two sides of it causes the movement to be transmitted by a mechanical connection to one of the walls of the instrument, which becomes distorted to an extent proportional to the pressure to be measured; the distortion being then transmitted to an indicator or recording apparatus of known form.



Roschanek's Pressure Recorder.

A sectional elevation is given of one form of the apparatus, provided with a flexible tube.

In the casing A a relatively large diaphragm B is secured, which is acted upon by the two pressures, the difference of which it is desired to determine. The two pressures are transmitted through openings C O into the compartments below and above the diaphragm. The diaphragm, which is normally completely free from any load, may be provided in the centre with a stiffener either on one or both sides. In the form illustrated, it supports in the centre a spindle E connected to a rod secured at F to a flexible tube fixed at its other end on the casing and communicating with the interior. The displacement of the diaphragm produced by the difference of the pressures existing on both sides of the diaphragm is transmitted to the rod which therefore bends the tube, the displacements of which are transmitted without any friction, to turn an index G, recorder or the like, preferably through the medium of a device increasing the movement.

Gas-Valves and Means for Operating them.

BRÖNDUM, M. V., of Aarhus, Denmark.

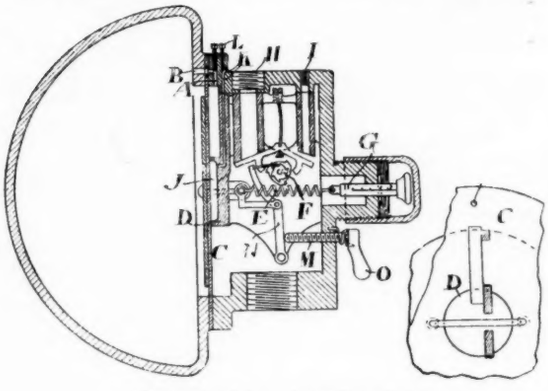
No. 10,186; April 24, 1914.

Gas-valves, the patentee points out, are sometimes operated (through the medium of a ratchet mechanism) by a diaphragm separating two chambers communicating with one another by a narrow duct, so that, while gradual variations in pressure are equalized through the duct, any sudden increase in pressure causes the diaphragm to be deflected for reversing the position of the valve. The present invention relates to a device of this kind. It consists essentially in the provision of a

dished diaphragm support against the mouth of which the diaphragm is held by an adjustable spring so as to restrict the area on which the gas pressure initially acts—the cavity of the support being in communication with the atmosphere by a narrow duct which, by the admittance of air, allows the diaphragm finally to leave the support and take up the full force of the pressure.

A vertical section of the apparatus and a front view of some of its parts are given in the illustrations, the *modus operandi* of which is as follows.

The main illustration shows the normal position of the elements. Any gradual change in pressure is equalized in the two gas-chambers through the ducts A B, so as not to affect the diaphragm C. Since the gas only escapes slowly through the ducts, however, any sudden increase in pressure will force the diaphragm away from the support D in opposition to the spring E. As the diaphragm is initially protected by the support, the diaphragm area will be correspondingly restricted, so that the pressure cannot at once act with its full force. As soon as the diaphragm leaves the support, however, the pressure will be able to act on the entire area of the diaphragm, so that the spring can be tensioned sufficiently for turning the wheel F through one tooth space.



Brondum's Gas-Lamp Valve Adjuster.

The sudden increase in pressure necessary for the actuation of the diaphragm will therefore under all conditions depend upon the tension of the spring, and such tension can be regulated by means of a sliding piece G so as to represent a certain percentage of the normal gas pressure whether this be high or low. As soon as the pressure is relieved or equalized through the ducts A B, the diaphragm will be restored by the spring to its normal position, and the ratchet-wheel will be turned through one tooth space—the valve lever being at the same time reversed for opening the lamp outlet H and closing the pilot flame outlet I. The pressure in the cavity J will be gradually relieved through the ducts K L, the capacity of which can be regulated by means of the screw shown. When at the next sudden increase in the pressure the operation is repeated, the lamp flame will be extinguished and the pilot flame turned on.

The device can also be operated by hand, for which purpose a screw M is arranged in the wall of the casing so as to bear against the lever N and rock it when turned by the thumb-piece O.

Finding the Position of Gas or Water Pipes.

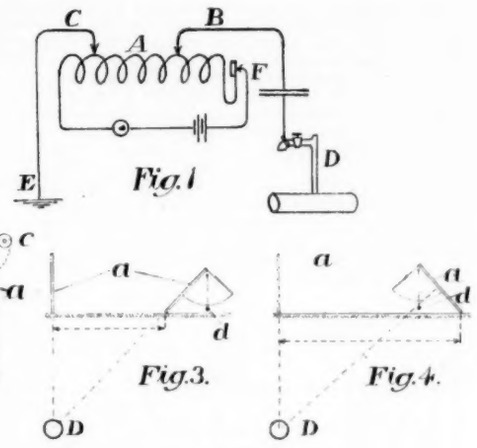
SHARMAN, A. W., of Wandsworth Common, S.W.

No. 16,799; July 14, 1914.

The purpose of this invention is to provide apparatus whereby the presence and position of gas or water pipes, &c., "can be determined with accuracy when buried in the ground or concealed from view in walls or the like."

Heretofore, the patentee remarks, methods have been proposed in which the pipe is made part of a metallic electrical circuit through which pulsating currents are passed; the instrument generating usually the secondary of a small induction coil, the impulses being connected to both ends of the part of the pipe being searched for. This necessarily entails the use of connecting wires at least as long as the portion of pipe under survey. Several objections arise to this method. In the first place, since the wire carries the same current as the pipe, confusion is likely to result. In the second place, if public roads intervene between the two points on the pipe to which the wires are connected, this arrangement is obviously extremely inconvenient. In the method he suggests only one connection to the pipe is required. The generating instrument is attached by one of its terminals to a point on the pipe, while the other terminal is connected to earth by means of a plate of metal or a peg, or some other convenient way. Under these conditions, "the impulses imparted to the pipe travel along it for surprisingly long distances before finding a way back through the earth." Also in the method adopted the series of electrical impulses or momentary currents —of short duration but of great intensity—are "characterized by a wave form which shows that the impulse attains the maximum current value in an exceedingly short period of time, and that its reduction to zero is also very abrupt."

Impulses of this character are readily obtained by connecting to two points along the winding of a low resistance iron cored induction coil A (fig. 1), two wires B C, which are respectively connected to the pipe system D and to an independent earth plate E situated some yards distant from the pipes. A direct current is allowed to flow through the inductive winding until the core is saturated, when it is suddenly interrupted—preferably by an automatic make-and-break device F such as is in common use in connection with medical and other induction coils. The sudden collapse of the field due to the current generates an impulse in the pipe system and independent ground plate—the current flowing mainly along the pipes and producing a pulsating magnetic field symmetrically around the pipes as a centre.



Sharman's Pipe Finder or Locator.

This pulsating field is detected and explored by the aid of search coil, fig. 2, or inductive circuit consisting of some twenty turns of insulated copper wire wound on a frame about 3 feet across. The component turns of wire are bound together so as to form a flexible multiple cable with all turns in series. This flexible circuit *a* during use is supported upon a wooden frame *b*; the cable being strained to the shape of the frame so as to embrace the largest possible area. The ends of the flexible circuit are connected directly (or in combination with a condenser) to the terminals of a telephone *c* or other detector of pulsating currents. The frame is provided with a plumb-bob *d* (fig. 3) or similar device which indicates when the plane of the coil or frame is vertical or measures the angle between the plane of the coil and the vertical.

In practice, the induction coil, together with the battery terminals and interrupter, is mounted in a portable case and provided with a starting switch, which may either be of the usual hand-operated form or may include contacts which are operated at regular intervals by the aid of a clockwork driven cam—the whole forming the "generator" of the system, the terminals of which are respectively connected to some point on the pipe system under test, D, and to an independent ground connection E, some yards from the pipes. This latter ground connection may take the form of a metallic peg driven into the ground at a suitable point.

The generator being brought into action, the operator takes the search coil frame, and while listening to the attached telephone holds the frame vertically and over the position where the pipe is assumed to be. The signal impulses from the generator will be audible in the telephone; and the sounds reach a sharp maximum when the plane of the search coil is vertically over the pipe run and parallel with it. Having determined the position and direction of the pipe, its depth at any point can be found by making a similar observation at a known distance on either side of its position. Maximum signals will now be obtained with the search coil frame tilted so as to be parallel with a radius draw from the pipe as a centre (fig. 3). If the lateral displacement is kept constant—say, at 5 feet—the angular scale combined with the plumb-bob may be calibrated to read the depth of the pipe direct in feet.

Apparatus constructed as described, and taking 6 watts for the generator, enabled, it is said, the gas and water pipes to be plotted over a radius of a quarter of a mile from the point at which the generator was applied.

An alternative method of determining the depth of a conductor consists in making an observation on one side of the pipe run as described herein and tilting the frame until signals cease (fig. 4). This position is very sharply defined. In this case the plane of the coil is at right angles to a radius drawn from the pipe, and the position is that of zero coupling.

Gas-Washers.

DAVIS, G. K., of Strand, W.C.

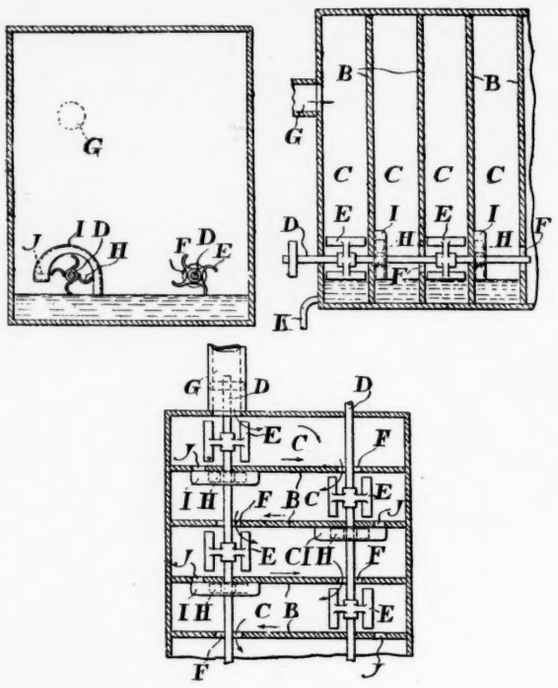
No. 17,005; July 17, 1914.

In his former patents (No. 2113 of 1909 and No 4543 of 1910), the patentee says he describes apparatus for washing gas comprising a casing divided into a series of chambers by transverse partitions provided with apertures for the flow of the gas through them, and shafts extending longitudinally through the casing and carrying fanners in each transverse chamber. The gases to be washed are compelled to travel either in a vertical or a horizontal zigzag manner through the several compartments, by the arrangement of the lateral apertures in the transverse partitions alternately at opposite sides. Furthermore, the washing liquid was allowed to travel by gravity throughout its length through apertures provided for the purpose. But he has now found, in practice, that it is necessary in some cases to effect a more intimate contact between the gas and the liquid than is obtainable by apparatus of the type described, and to this end he now proposes to utilize the centrifugal force created by the rapidly rotating fanners for the purpose of drawing the gas from chamber to chamber through the apparatus.

A transverse, longitudinal, and horizontal section of apparatus constructed according to the invention are given on p. 342.

The casing of the washer is of rectangular shape in cross section. B are the transverse partitions which divide it into a series of cham-

bers. D are two shafts which extend longitudinally through the chambers, and E are fanners keyed upon the shafts—one fanner on each alternate shaft. They are arranged relatively to the liquor in the bottom of the casing, so that the tips of the blades dip slightly below the surface, whereby, when the shafts rotate, the blades catch a portion of the liquor and throw it up into the chambers in the form of spray. F are gas-passages provided in the partitions concentrically with the shafts and alternately at opposite sides of the partitions. G is the inlet through which the gas enters the first chamber, passing through



Davis's Gas-Washer.

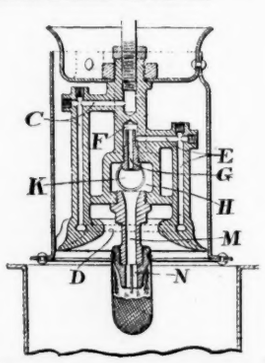
the chamber and escaping through the passage in the partition into the next chamber. It then pursues the horizontal zigzag course, being assisted by the centrifugal action of the fanners behind the passages. H is a small water-wheel provided in each chamber upon the shaft with which it rotates. I is a deflector arranged above each water-wheel, and which directs the liquor thrown off the wheel in a tangential direction through the aperture J in the partition into the next compartment to that in which the wheel is situated. The diameter of the wheel is such that the correct level of liquor is maintained in the washer to give an efficient spray, and the width is proportioned to the amount of liquor which has to flow through the washer. K is the discharge pipe through which the liquor is withdrawn.

Incandescent Gas-Lamps.

AUBLET, HARRY, AND CO., LIMITED, and WADE, J. T., of Peterborough.

No. 17,099; July 18, 1914.

This invention relating to inverted incandescent gas-lamps refers to lamps in which means are provided for heating the gas to a high temperature during its passage from the supply pipe to the chamber where it is mixed with air before it enters the nozzle.



Aublet, Harry, and Wade's Incandescent Gas-Lamp.

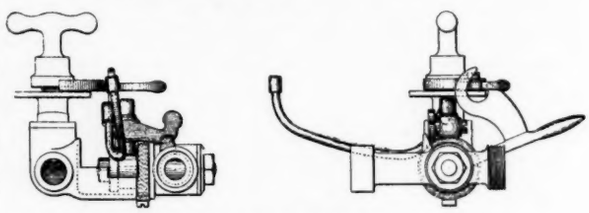
The gas-pipe (connected at the top) communicates with passage ways C in the casting, which in turn communicate with a passage D in the lower portion near to the mantle—thus utilizing the heat of the waste products as they leave the mantle. The passage D in turn communicates with other passages E leading to a small chamber F. G is a nipple screwing into the chamber F through which the heated gas emerges into the mixing chamber H, where it is mixed with air passing through a regulated opening K. M is a tube conveying the gas and air mixture to the mantle fitted at the lower end with a clay nozzle which extends some distance into the mantle, and is divided into two passages by a thin partition of nickel or other suitable material which drops into grooves provided for it so as to form a twin discharge of the combustible mixture into the mantle.

Water and Gas Taps for Geysers.

JOSEPH BREEDEN AND CO., LIMITED, and BREEDEN, F. V., of Birmingham.

No. 22,449; Nov. 13, 1914.

This invention relates to taps so arranged that the supply of gas cannot be turned on before the water tap is turned on, and the latter cannot be turned off while the gas-tap is on.



Breeden's Water and Gas Tap for Geysers.

As shown, on the body of the water-tap is a preferably U-shaped arm or bracket terminating in a ring or collar, to which the body of the gas-tap is fixed with the axis of its plug at right angles to the axis of the water passage or way of the water-tap. One edge of the U arm constitutes a limiting stop for the projecting gas-tap handle, which carries a projecting arm with a hooked shaped end. To the water-tap is pivoted a lever having a part near the axis or fulcrum which bears on a flange on the stem of the tap when the tap is turned off, and thereby prevents the turning of the lever. When the water-tap is turned on the flange on the stem of the handle is raised, and consequently the lever is free to be turned. The handle of the lever is engaged with the hook-shaped end of the projecting arm on the handle of the gas-tap; consequently, when the water-tap is turned off the handle of the gas-tap is locked in its "off" position, and when the water-tap is turned on the handle of the gas-tap is free to be turned "on," and in its angular motion it effects the turning of the lever on the water-tap and the carrying of its curved arm under the flange of the stem of the handle of the water-tap, which, therefore, cannot be turned off prior to the turning off of the gas-tap.

APPLICATIONS FOR LETTERS PATENT.

11,181.—YATES, H. J., and THORP, F. & H. T., "Prepayment meters." Aug. 3.
11,269.—NOONAN, J. H., "Gas cooking-apparatus." Aug. 4.
11,281.—RIGG, J., "Atmospheric burners." Aug. 4.
11,315.—BRITISH COKE-OVENS, LIMITED, and SCHUSTER, N., "Scrubbers." Aug. 5.
11,347.—PURSER, A., "Fixing patches or branch pieces to pipes." Aug. 5.
11,350.—JACKS, T., and ROWLSON, B., "Coal gas or water gas heat and steam producer." Aug. 6.
11,377.—CUTLER, S., JUN., "Feed-device for gas-generators." Aug. 6.
11,378.—MILLER, R., "Mantles and burners." Aug. 6.

PARLIAMENTARY INTELLIGENCE.

GAS AND WATER PROVISIONAL ORDERS FOR 1915.

Report by the Board of Trade.

The Board of Trade last week issued a report on their proceedings during the past session under the Gas and Water Works Facilities Act, 1870. It shows that in December, 1914, fourteen applications were made for Provisional Orders under the Gas and Water Works Facilities Act, 1870. Of these, eleven related to gas undertakings, one to a gas and water undertaking, and two to water undertakings. The amount of capital proposed to be authorized was £196,500 by shares, and £98,776 by loan, of which £186,000 share and £86,826 loan capital was for gas; and £10,500 share and £11,950 loan capital for water purposes. The Gas Orders related to Cheadle, Guildford, Heathfield and Waldron, Liverpool, Melton Mowbray, Mid-Kent, Oakham, Rothwell, Staveley, Swanage, and Thirsk; the combined Gas and Water Order to Hoylake and West Kirby; and the Water Orders to Fisherton Anger and Bemerton, and Thirsk District.

ORDERS AND OBJECTS.

The principal objects of the applications were as follows:—

Cheadle Gas.—To empower the Cheadle Gaslight and Coke Company, Limited, to maintain and continue their existing gas-works, to construct and maintain additional works, to manufacture and store gas, and to supply gas within the parish of Cheadle, in the county of Stafford.

Fisherton Anger and Bemerton Water-Works.—To make provision with regard to the capital of the Fisherton Anger and Bemerton Water-Works Company, and to sanction and confirm the issue by the Company of certain debenture stocks.

Guildford Gas.—To define and extend the limits for the supply of

gas by the Guildford Gaslight and Coke Company, to empower the Company to raise additional capital, to repeal the powers of the Woking Water and Gas Company and the Cranleigh Gas and Coke Company, Limited, to supply gas in part of the extended limits, and to change the name of the Woking Water and Gas Company to the Woking Water Company.

Heathfield and Waldron Gas.—To empower the Heathfield and Waldron Gaslight and Coke Company, Limited, to maintain and continue their existing gas-works, to manufacture and store gas, and to supply gas in the parishes of Heathfield and Waldron, in the county of Sussex.

Hoylake and West Kirby Gas and Water.—To empower the Hoylake and West Kirby Gas and Water Company, Limited, to raise additional capital and to construct and maintain additional works for the manufacture and storage of gas, and to confer on the Company further powers in respect of their water undertaking.

Liverpool Gas.—To extend the limits for the supply of gas by the Liverpool Gas Company, to authorize the transfer to the Company of the gas undertaking of the Liverpool Corporation in the township of Fazakerley, to repeal the Liverpool Corporation (Fazakerley) Gas Orders, 1906 and 1911, and to make provision with respect to the establishment of a profit-sharing scheme by the Company.

Melton Mowbray Gas.—To extend the limits for the supply of gas by the Melton Mowbray Gaslight and Coke Company, Limited, and to empower the Company to raise additional capital.

Mid-Kent Gaslight and Coke.—To empower the Mid-Kent Gaslight and Coke Company to raise unissued capital by preference shares.

Oakham Gas.—To define and extend the limits for the supply of gas by the Oakham Gas Company, Limited, and to empower the Company to raise additional capital.

Rothwell Gas.—To empower the Rothwell Gaslight Company to raise additional capital.

Staveley Gas.—To extend the limits for the supply of gas by the Staveley Gaslight and Coke Company, Limited, to sanction and confirm the acquisition by the Company of certain lands and the construction thereon of certain existing gas-works, to empower the Company to construct and maintain additional works, and to raise further capital.

Swanage Gas.—To cancel the water capital of the Swanage Gas Company and to repeal the provisions of the Swanage Gas and Water Acts, 1901 and 1912, so far as they relate to such capital, and to make provision for the application of the assets of the water undertaking.

Thirsk Gas.—To empower the Thirsk Gas Company to raise additional capital and to construct and maintain additional works for the manufacture and storage of gas.

Thirsk Water.—To extend the limits for the supply of gas by the Thirsk District Water Company, Limited, to empower the Company to raise additional capital, and to construct and maintain additional water-works.

Two of the applications—those from Cheadle and from Heathfield and Waldron—were in respect of existing non-statutory undertakings. The remainder were in regard to undertakings already authorized by Special Acts or Provisional Orders.

Opposition.

No objections were lodged against the Mid-Kent, Rothwell, and Thirsk gas applications; and those lodged against the Heathfield and Waldron, the Oakham, and the Swanage applications were subsequently withdrawn. The objections and representations made with regard to the other applications were duly considered by the Board.

The promoters of the Guildford and Melton Mowbray applications failed to obtain the consent of certain local and road authorities, and requested the Board to exercise their powers under section 4 of the Gas and Water Works Facilities Act, 1870, and to dispense with the consent of the authorities. After holding an inquiry in each case, the Board decided to dispense with the consent of the authorities concerned, and to grant the Provisional Orders applied for, subject to certain modifications and amendments which appeared to them to be desirable. A special report was laid before Parliament in these cases.

In the case of the Hoylake and West Kirby applications, objections were lodged by the Birkenhead Corporation. At the inquiry which was held by the Board, it appeared that the Corporation and the Hoylake and West Kirby Gas and Water Company, Limited, the promoters of the application, possessed concurrent powers to supply gas and water in certain areas. The Board endeavoured to obtain an arrangement between the parties, whereby the overlapping of their limits of supply might be avoided; and they understand that such an arrangement has now been entered into, and that steps will be taken to make it statutory at the earliest opportunity.

The Board granted Provisional Orders in respect of all the applications made to them.

Price of Gas.

A maximum price per 1000 cubic feet was fixed in the following Provisional Orders: Cheadle, 5s.; Heathfield and Waldron, 5s. 6d.

The undertakers of the Guildford Order have at present a standard price of 3s. 6d. for gas supplied within a radius of 2 miles of their works, and of 4s. for gas supplied beyond that radius; but no increase of dividend may take place when the actual price of gas is above 3s. within the radius of 2 miles, or 3s. 6d. beyond that radius. Under the Provisional Order a uniform standard price of 3s. 6d. is fixed, as from the 1st of January, 1916; but no increase of dividend may take place when the actual price exceeds 3s. The undertakers may, however, make an extra charge, not exceeding 6d., within their limits of supply outside the borough of Guildford and beyond a radius of 2 miles from the gas-works, and a further extra charge, not exceeding 6d., within their limits of supply outside the borough and beyond 4 miles from the gas-works.

Under the Melton Mowbray Order, the existing standard price of 4s. is retained; but the undertakers are given power to make an extra charge, not exceeding 10d., within the additional limits of supply authorized by the Order.

The existing standard price of 4s. 6d. is retained in the Oakham Order; but the undertakers are given power to make an extra charge, not exceeding 6d., in part of the additional limits of supply authorized by the Order.

By the Staveley Order, a standard price of 4s. is substituted for the existing maximum price of 5s.

Illuminating and Calorific Power.

An illuminating power of 14 candles is prescribed in the Guildford, Heathfield and Waldron, Oakham, and Thirsk Gas Provisional Orders; and in the three last mentioned Orders the "Metropolitan" argand No. 2 burner is prescribed as the testing burner. The illuminating power previously prescribed was 15 candles in the case of the Guildford and Oakham undertakings, and 14 candles in the case of the Thirsk undertaking.

No provisions as to the testing of illuminating power were inserted in the Cheadle and Staveley Orders; but provisions for the testing of the calorific power of the gas supplied by the undertakers were inserted instead. These provisions provide for a standard calorific power of 500 B.Th.U., and make the undertakers liable to penalties if this standard is not maintained.

Special Provisions.

The Cheadle Order contains a clause limiting the price of gas for public lighting to four-fifths of the highest price charged to ordinary consumers, and also a clause allowing the undertakers to sell their undertaking to any local authority within the limits of supply which shall be authorized to purchase it.

A clause has been inserted in the Heathfield and Waldron and the Thirsk Gas Orders limiting the powers of the undertakers to pay back-dividends to within five years of the payment of a deficient dividend, and a clause in the Thirsk Water Order prohibits the payment of any back-dividends.

The Liverpool Order contains provisions authorizing the transfer of the Fazakerley gas undertaking of the Liverpool Corporation to the Liverpool Gas Company. Power to grant an Order, under the Gas and Water Works Facilities Act, 1870, containing such provisions was conferred on the Board of Trade by section 66 of the Liverpool Gas Act, 1914. The Order also contains provisions with regard to a profit-sharing scheme.

The Melton Mowbray, Oakham, and Staveley Orders contain provisions with regard to the disposal of a part of the balance carried forward by the undertakers in order to reduce such balance to a sum not exceeding one year's dividends.

Under the Swanage Urban District Water Act, 1913, the water undertaking of the Swanage Gas Company was transferred to the Swanage Urban District Council; but the water capital of the Company was not cancelled. The Swanage Order cancels the water capital of the Company, and provides for the distribution of the assets of the water undertaking.

Provisions have been inserted in the Fisherton Anger and Bemerton Order to regulate the capital of the undertakers. A clause has also been inserted providing for the purchase of the undertaking by the Salisbury Corporation.

A clause in the Hoylake and West Kirby Order restricts the undertakers from charging for water supplied to baths during the present war, and afterwards without the consent of the Board of Trade.

A clause has been inserted in the Provisional Orders prohibiting the raising of money during the war, and within one year after the termination thereof, without the consent of the Treasury.

Clauses have been inserted, by agreement, in various Provisional Orders for the protection of road and other authorities.

CONFIRMATION BILLS.

Bills to confirm the Orders were introduced in the House of Commons as follows: Gas and Water Provisional Orders (No. 1) Bill, to confirm Provisional Orders relating to Oakham Gas, Staveley Gas, Thirsk Gas, and Thirsk District Water; Gas and Water Provisional Orders (No. 2) Bill, to confirm Provisional Orders relating to Guildford Gas, Melton Mowbray Gas, Swanage Gas, and Hoylake and West Kirby Gas and Water; Gas and Water Provisional Orders (No. 3) Bill, to confirm Provisional Orders relating to Cheadle Gas, Heathfield and Waldron Gas, Liverpool Gas, Mid-Kent Gaslight and Coke, Rothwell Gas, and Fisherton Anger and Bemerton Water.

Opposition in Parliament.

A petition was deposited in the House of Commons against the Gas and Water Provisional Orders (No. 2) Bill by the Cheshire County Council; but an agreement was come to between the parties, and the petition was withdrawn. The other two Bills were unopposed.

Royal Assent.

All the Bills to confirm the Orders received the Royal Assent on July 29.

Death from Injured Thumb.—A verdict of "Accidental death" was returned by a Coroner's Jury who inquired into the circumstances attending the death of Thomas Jones, a stoker at the Windsor Street Gas-Works of the Birmingham Corporation. Deceased was placing some bars in a furnace, when he sustained a slight injury to his thumb. A few days later, he became ill; and on admission to the Erdington Infirmary, he was found to be suffering from blood poisoning, which proved fatal.

High-Pressure Lighting for H.M. Government.—The Welsbach Light Company, Limited, have been instructed by the War Department to carry out an installation of high-pressure and low-pressure gas lighting at the new ammunition inspection shops at Park Royal. The high-pressure lamps being installed are the "Pharos-Welsbach;" the low-pressure lamps are the Company's "Victor" indoor type; and the compressors are the "Welsbach Bryan-Donkin." The installation also comprises seventy-four duplex soldering stoves.

MISCELLANEOUS NEWS.

THE MARKET FOR SULPHATE OF AMMONIA.

The Dangers Ahead—Need for Organization and a Definite Policy.

[From a brochure issued by the Sulphate of Ammonia Association.]

The disastrous fall in prices in 1896 brought about a crisis in the sulphate of ammonia market, and led British manufacturers to form their first Association to further the interests of the trade. This fall, from £12 to £13 per ton in 1893-4 to £7 to £8 per ton in 1896-7, was due chiefly to the operation of the law of supply and demand. Production had outrun consumption; and the active propaganda work of the Permanent Nitrate Committee was inducing agriculturists to spend what money they could afford for manures on nitrate of soda rather than on sulphate of ammonia.

The late Colonel Sir S. A. Sadler and Mr. W. G. Blagden may be said to have been the "onlie begetters" of the movement towards co-operation which resulted in the formation of the Sulphate of Ammonia Committee in July, 1897. Associated with them, as members of the first Committee, were Messrs. Isaac Carr, Francis T. Cotton, Robert Dempster, William Fraser, John Fyfe, Edward Harman, R. G. Perry, and Hanbury Thomas, who have continuously given their energy, thought, and time to the objects in view from 1897 to the present day.

The most eloquent testimony to the work of the Committee, acting in concert with similar propaganda bodies on the Continent, is the fact that the consumption of sulphate of ammonia in the world has risen from about 250,000 tons in 1896 to 1,250,000 tons in 1913, and that (in spite of ever-increasing production and severe competition from other forms of nitrogen) the price has been maintained at a level of £11 to £14 per ton, as compared with £7 to £8 when the Committee commenced operations.

Another Crisis is Approaching.

During the last few years, it has been evident that the sulphate of ammonia trade is approaching another crisis; and the appearance of synthetic sulphate of ammonia as a commercial product in 1913 convinced members of the Sulphate of Ammonia Committee that the scope of their work and influence would have to be largely increased if a repetition of the events of 1895-6 was to be avoided.

In view of the formidable array of well-organized competitors with whom they found themselves faced in the nitrogen market, British producers determined to form a Selling Association which should fully represent British sulphate of ammonia at home and abroad, and through which British manufacturers, acting together, should be able to exercise an influence in the world's markets commensurate with the weight of their production.

The outcome of this determination was the formation of the Sulphate of Ammonia Association in the autumn of 1914. The "Propaganda Branch" of the Association is carrying on the propaganda work of the Sulphate of Ammonia Committee. The "Selling Branch" is the central channel through which all British manufacturers may dispose of their sulphate of ammonia.

The nature of its work and the need it aims at supplying are fully explained in the following sections.

The Passing of the British Monopoly.

The principle of combination has long been recognized in the sulphate of ammonia trade. In many foreign countries it has taken the form of a Syndicate; and in Great Britain the same principle has been tacitly admitted ever since the first middleman began to buy sulphate of ammonia from different manufacturers, collect it into shiploads, and sell it to overseas consumers. This British form of combination, though very rudimentary, and possessing many very great disadvantages, nevertheless worked fairly well as long as the British manufacturer was by far the largest producer of sulphate of ammonia, and consequently had a monopoly of the world's markets. As long as the demand so far exceeded the supply of sulphate of ammonia that manufacturers were able to sell their salt at a price very largely in excess of its cost of production, there was no reason for them to trouble their heads about the particular methods by which these prices were obtained.

But a product which could be sold with such a large margin of profit was not likely to lack producers. The production of sulphate of ammonia was bound to increase; and it has increased enormously all the world over. Thirty years ago Great Britain was the only producer of consequence; to-day sulphate of ammonia is being made in every European country, as well as in the United States, Canada, Australasia, Argentina, India, Japan, and Russia. In spite of this enormous increase, sulphate of ammonia still figures as the *deus ex machina* in the *dénouement* of many a new coal, shale, or coke-oven company's prospectus—the sure guarantee of a dividend should all other products be worthless.

Sulphate of Ammonia a Primary Product.

But while the production of the salt as a bye-product has been, and is, increasing largely, sulphate of ammonia has to face the competition of other nitrogenous fertilizers, such as nitrate of soda cyanamide, or nitrolim, and nitrate of lime; and within the last eighteen months a new and inexhaustible source of supply of nitrogen has been successfully tapped and synthetic sulphate of ammonia placed upon the market on a commercial scale.

Great Britain no Longer the Largest Producer.

In 1911, the United Kingdom had to yield the first place as a producer of sulphate of ammonia to Germany; and a few manufacturers here soon became alive to the danger threatening overseas markets. The danger was seen to be all the more real because the German producers had long ago given up competing with one another, and had formed a powerful combination, controlled practically by one man with an advisory committee behind him.

What the Germans have Done.

With the formation of their Syndicate, the Germans deliberately adopted one policy, which they have ever since carried out with perfect consistency. They foresaw that unless they were able to increase their home consumption to a very large extent, their production would have to compete with British sulphate of ammonia in the overseas markets; and this competition would certainly lower the general level of price enormously. The Germans, therefore, set about increasing their own consumption—firstly, by admirably conducted experiments and propaganda work; and, secondly, by keeping their prices lower than the price of nitrate of soda, unit for unit. German prices have consequently often been lower than British prices, although the bulk of the German make was (and is) of 25 per cent. quality, as against British 24 to 24½ per cent.

In an interesting paper recently read before the Society of British Gas Industries, attention was drawn to this apparent anomaly.* In the discussion which followed, the conclusions drawn were that credit must be due to the British manufacturer for having obtained better prices for his inferior quality, and that it would not pay British manufacturers to make a better quality, seeing that they got better prices for 24 per cent. than the Germans did for 25 per cent. The founders of the Sulphate of Ammonia Association were not disposed to take so optimistic a view of the situation. They looked to the future rather than to the past; and their object in forming the Association was to put British manufacturers in a position to meet the dangers ahead.

Why They Did It.

The fact is that the Germans did not hold for higher prices because they did not want to do so. Their policy was to keep prices moderate, and develop their own consumption. But in spite of the enormous increase in home consumption which they were able to effect—from 96,000 tons in 1896 to 460,000 tons in 1913—their reports for the last few years have shown a growing anxiety as to the future of the market, in view of the very large increase in the production of nitrogenous manures throughout the world. This anxiety, and their determination to control and limit any new output of sulphate of ammonia as far as possible, became evident in the measures they adopted when the Badische Anilin und Soda Fabrik took them by surprise, in the autumn of 1913, by offering synthetic ammonia as a commercial product. The Syndicate and the Company came to terms, but only after a lengthy fight, which resulted in a heavy fall in the price of sulphate of ammonia all over the world. The Syndicate had to submit to very heavy monetary sacrifices; but they obtained control of the Company's sales.

A Result of German Nervousness.

Early in 1914 it was known that the supplies of nitrogen available to the world in 1914-15 might be about:

1,500,000 tons of sulphate of ammonia
2,700,000 „ „ nitrate of soda
300,000 „ „ cyanamide (nitrolim)
70,000 „ „ Norwegian nitrate of lime.

The German Syndicate came to the conclusion that production had outstripped probable consumption; and accordingly they began taking orders for forward delivery at prices at which British manufacturers were not willing to sell. In this way, very large quantities—totalling about 156,000 tons—were sold to America, Java, and the West Indies, for delivery during 1914 and the spring of 1915, while Spain, Japan, Ceylon, and Egypt were also invaded.

German Singleness of Purpose.

It may be remarked in passing that the Germans have always made a point of cultivating primarily those markets which offered the best guarantees of financial stability—*e.g.*, Java and America; leaving to British manufacturers and merchants markets like Japan and Spain, which have at times shown great financial weakness and require three or six months' credit. They have also shown a preference for "big deals," for which Java and America are also the best markets. In this, again, they have been pursuing a definite policy. They were determined to secure a safe outlet in the safest markets; and once having obtained a footing in these markets, they proceeded to strengthen their hold by delivering one standard quality of salt and packing, and one only—the best.

They were able to undertake very large orders within a few months, owing to the fact that each member of the combine has to be prepared to store a large portion of his make. When it is a question of export orders, therefore, German producers of sulphate of ammonia are able to act quickly, on a large scale, and as one man. As regards their home market, also, there is a complete understanding among the various groups.

Need for a Strong British Combine.

This was the situation which led manufacturers here to form the Sulphate of Ammonia Association in 1914. They were convinced that only by combination could the menace of German methods and organization be met.

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* The statement was erroneous in the form in which it was made, because the German prices compared were "net naked," while the Hull prices were "in bags and less 3½ per cent. discount." The following table gives comparative average prices in recent years:—

	British f.o.b. Hull, Net Naked 24½ per Cent.	German f.o.r. German Works, Net Naked. 25 per Cent.		British f.o.b. Hull, Net Naked. 24½ per Cent.	German f.o.r. German Works, Net Naked. 25 per Cent.
1900	209·25	208·95	1910	229·66	220·95
1905	237·00	233·45	1911	260·58	232·50
1906	227·33	234·80	1912	272·75	248·65
1907	222·44	228·25	1913	253·33	255·20
1908	219·00	228·45	1914	214·09	223·90
1909	212·16	222·70			

Prices in shillings per ton of 2240 lbs.

What was the British method of selling prior to the formation of the Association?

The British producer, as a rule, was not in direct touch with the export market. It would, indeed, be practically impossible for the 500 to 600 makers in this country all to be selling direct in foreign markets. The principle of combination alluded to above asserted itself as a necessity in the early days of the trade, and produced the export merchants. The export trade of the United Kingdom has now for many years been in the hands of comparatively few merchant-dealers. They have acted most efficiently as distributors; and the development of the export markets in many countries is due largely to their initiative and far-sightedness in acting as bankers as well as suppliers to their customers. On the whole, they have worthily represented British trade. But the fact that the trade is in their hands, and that they are few in number, while the manufacturers are many, makes them to a large extent independent of producers; and the latter are thus deprived of adequate control of a market in which they have a vital interest.

Some Examples.

To take a simple instance, there has never been anything to prevent British merchants from placing orders with the German Syndicate. Indeed, British merchants have frequently been compelled to go to Germany for supplies, for the simple reason that the quantity of high-testing sulphate of ammonia produced here was not large enough to satisfy the demand from overseas consumers. For it must be remembered only a small proportion of British sulphate of ammonia tests 25 per cent., and only a portion of this is guaranteed at 25 per cent.

We have shown in our pamphlet entitled "Does it Pay to Make 25 per Cent. Ammonia?" why consumers prefer 25 per cent.* But from the British manufacturers' point of view, it is objectionable that German sulphate of ammonia should thus obtain a footing in what used to be British markets. The remedy lies in the British producer's own hands. Let him turn out a quality equal to German salt, let him combine to sell together with his fellow-makers, and he will be able to control the merchants and will hear less about German competition.

In respect of market information again the British manufacturer has hitherto been at a disadvantage compared with merchants. For the dealers are in close touch with all oversea markets as well as with all local home markets, whereas the manufacturer is to a certain extent isolated, and information takes longer to reach him.

It is obvious that occasions must arise when the opinions of merchants and manufacturers about the market differ considerably; and when this has happened in the past the merchants have always been able to persuade a certain number of producers that their view was the correct one. So that even if a majority of manufacturers here held the opposite view, they were unable to enforce it. Why not? Because there were no practical means of registering such a consensus of opinion even if it existed; still less was there any machinery available for giving practical effect to it.

Unity is Strength.

Now, in making these remarks, we are simply making a plain statement of facts, and the only conclusion we wish drawn from them is that manufacturers can never hope to gain a preponderating influence in the market until they are as well-informed as the dealers, and are prepared to take immediate and concerted action. This dualism of control in the English market tends to give the German Syndicate very marked advantages over British producers; for while merchants and makers here are disputing in the language of bids and counter-offers as to whether or no the time has come to sell, the Germans slip in and take the orders. This is especially the case with regard to forward orders. Very large consumers, like Java, are in the habit of securing their supplies, or a good part of them, many months before the actual time of shipment. If prices are considered favourable, many thousands of tons are bought within a comparatively short time.

How Export Orders are Placed.

Let us analyze in some detail how these orders are placed. We will suppose that we are in the month of June, and that Java is sending large inquiries for shipment during the following spring. Let us assume, also, that the Germans have come to the conclusion (as they did early in 1914) that there is likely to be an excess of nitrogen in the spring, and that they wish to sell 150,000 tons of sulphate of ammonia. They naturally turn to the markets in which 25 per cent. quality is best appreciated. Java is one of these. They ascertain at about what price British merchants are sellers, and proceed to under-quote them. In this way preliminary orders for a few thousand tons may be placed with Germany. Now, what is the position here? Merchants go to manufacturers with their inquiries, and endeavour to persuade them to make offers at a price which will compete with German prices. Each manufacturer here tends to consider the problem from the point of view of his own make, and is perhaps inclined to wait a few months longer before committing himself to spring selling—especially at what seems a low price.

The German's Opportunity.

The result is that the British merchant is placed in this dilemma—either he has to allow the orders to be taken by Germany or he has to take a very big speculative risk. It will depend on his view of the market as to which of these two alternatives he adopts. But even supposing he decides to undersell the Germans, he will not be willing to "sell short" more than a limited quantity. Fluctuations of 10s. and even 20s. per ton in the price of sulphate of ammonia are not uncommon; and it is therefore obvious that even those firms which command the largest financial resources will wish to limit their risks to a few thousand tons.

Another Advantage of Unity.

It is clear that in this respect the Germans have had very great advantages over producers here in dealing with business on this scale. A further very important advantage they have has to do with the rate of freight. It is a matter of common knowledge that shipowners are willing to make special terms for large quantities; so that as soon as the Germans have taken a certain number of orders they can go to their shipowners and save perhaps 2s. 6d. to 5s. per ton in extra rebates. It is obvious that a single shipper of very large quantities is in a better position to bargain with the shipowners than a number of merchants each with a small quantity.

Past Difficulties.

These, then, are some of the difficulties which confront British traders. We are not contending that our rivals have always done better than we have at the prices they have accepted, nor that there is any particular virtue *per se* in selling for far forward delivery. British producers in their anxiety to secure an outlet for their salt have often sold for forward at a discount, when they would have done better to wait. And even when it has been right to sell forward, the variety of competing interests—producer against producer and merchant against merchant—has brought prices down to an unnecessarily low level. But we wish to show that, owing to the peculiar manner in which the trade is carried on here, British manufacturers have hitherto not been able to gain a clear view of the position in the world's markets. Their opinions as to the right time for selling have necessarily been limited too much by the proportions of their own individual production; and mutual competition has made it impossible for them to take collective action.

Our Object.

The remedy for these "discontents" is to substitute combination for competition. That is the fundamental principle underlying the formation of the Sulphate of Ammonia Association. Our chief aim and object are to unite all British producers of sulphate of ammonia into one body; to use the large store of individual experience and wisdom for the common good; and thus to present a united front to foreign competition.

We have seen the same movement towards co-operation and combination developing among makers of sulphate of ammonia in the United States, France, Belgium, and Germany. In the nitrate of soda trade, producers have on various occasions taken effective common action in the interests of the trade as a whole. The various companies interested in cyanamide also have working arrangements delimiting their respective spheres of action. In the nitrogen market, as in many others, it seems certain that in future "the race will be to the swift, and victory to the strong." What is required is a strong and completely representative organization, with full powers to watch over the interests of British manufacturers and to take immediate action. It is this want which the Sulphate of Ammonia Association aims at supplying.

Dangers Ahead.

Some events have lately occurred which are of great significance in this connection. In the first place, it has come to our knowledge that the German Syndicate has approached a firm of allied nationality in an allied country asking them to carry on propaganda work for German sulphate of ammonia in that country during the continuation of the war; and the Syndicate state, in their report for 1914, that they have resolved to maintain the activity of their foreign offices as far as possible, in order to extend and develop their opportunities for selling after the war.

In the second place, a Bill has been introduced into the German Reichstag to create a commercial monopoly in nitrogen in Germany down to March 31, 1922. The preamble to the Bill states that owing to the increase in output of synthetic nitrogen and of the substitutes which have been found for nitrate of soda during the war, German nitrogen producers have made both German agriculture and industry (particularly the explosives industry) independent of foreign supplies, and that they will be able to meet the requirements of both in the future, provided the remunerativeness of the industry after the war is guaranteed by the establishment of a monopoly. And last, but not least, the Badische Company announce they will shortly be making at the rate of 300,000 tons per annum; so that Germany's production of ammonium sulphate will be about 800,000 tons a year.

What is the meaning of these events? It is this. That British sulphate of ammonia will to a far larger extent than ever before have to meet the competition of nitrate of soda in the world's markets. Germany consumed about 800,000 tons of nitrate of soda in 1913. If a nitrogen monopoly is created in Germany, these 800,000 tons of nitrate of soda will have to find an outlet in other markets. Stated in terms of sulphate of ammonia, this means that a quantity of nitrogen equal to about one-and-a-half times the production of the United Kingdom for 1914 may be thrown upon the market, in competition with our own increasing production.

This is one meaning of these events; the other is that, besides being able to supply all their own requirements, the Germans expect to be able to continue to export as well. In other words, the German producer is trying to entrench himself in his own country (whether to the ultimate benefit of consumers in the fatherland or no, remains to be seen), while reserving to himself complete liberty of action as regards export. Even if there is a large fall in the price of nitrogen throughout the rest of the world, the German manufacturer will not be immediately affected at home, whereas he will have it in his power to bring about just such a fall by appearing as a cheap seller in our markets. Having denied himself at home for some years in order to increase consumption in Germany by low prices, it may occur to him to encourage consumption abroad at the expense of the British manufacturer. It will be quite easy for him to keep prices low outside Germany by judiciously, and from time to time, offering a few thousand tons cheaply in overseas markets. The temptation to adopt these tactics will be all the greater if British manufacturers continue to sell on the good old principle of "Each for himself and Devil take the hindmost;" for this "principle" will give the German a guarantee of some measure of success. Of course, the monopoly may not be created—it is being vigorously opposed, especially by the Badische Company, who maintain that their cost of production is lower than that of the cyanamide producers—but even so we shall have to meet largely increased German competition. Indeed, without a monopoly the Germans will necessarily pay more attention to our export markets.

* See "JOURNAL" for July 20 last, p. 124.

The Only Way.

The only way to keep German sulphate of ammonia out of our markets is for British producers to agree to act and to sell as one man through one organization. Only by combining together and ceasing to compete one with another can British makers hope to oust the Germans and compel them not to produce more nitrogen than they require themselves until the world is ready to consume greater quantities. Only by unanimity will British manufacturers become arbiters of the sulphate of ammonia market.

Danger not from Germany Alone.

There are some who think the result of the war will so profoundly alter the position of Germany that it is a matter of indifference to British manufacturers whether the Germans put their Bill into operation or not. We say, in reply to them, that even if Germany ceased to exist altogether, the need for co-operation among British producers would not be any the less great nor the advantages any the less appreciable.

The production of nitrogen by synthesis has passed the experimental stage, and to-day large quantities of synthetic sulphate of ammonia, synthetic cyanamide, and synthetic nitrate of lime are being offered for sale. Synthetic sulphate of ammonia can now be produced anywhere and everywhere.

Now, the production of nitrogen as a bye-product cannot be limited as such; so that the only way to prevent over-production is to limit the supply of nitrogen produced as a primary product. Such a limitation can only be arrived at through a series of agreements made between the different nitrogen groups. It is clear that the best organized, most representative, and therefore most powerful, groups will be able to make the best bargains; and unless British producers of sulphate of ammonia form such a group when the time comes, their interests will go undefended.

Why not "Wait and See"?

It is sometimes objected that there is no need to trouble about these somewhat nebulous problems and difficulties of the future, until their solution is necessary; it is pointed out that sulphate of ammonia is now selling at about £15 per ton; that there has never been any difficulty in selling the salt; that British producers always have sold individually; and that, therefore, there is no need for any manufacturer to join an Association, which merely offers him superfluous assistance in selling what he has always sold before himself.

Now is the Time to Combine.

The answer to this objection is twofold: Firstly, that time and experience are required in order to accustom 500 to 600 individuals to work together, so that if we wait till the problems have to be faced, it will be too late; and, secondly, that while we are perfectly willing to admit that it may always be possible to sell sulphate of ammonia in the same manner as hitherto, we deny that individual salesmanship, however good, can ever hope to control the gigantic forces of supply and demand which rule the market. In other words, a good salesman who is well informed and has his fair share of luck, may obtain a slightly better average price over a number of years than a bad salesman; but this will always be within the limits of the general market prices, over which he has no control. But by combining with other individual sellers and selling through one organization, the manufacturer will gain the power to control the general level of price. When all manufacturers have joined the Sulphate of Ammonia Association, and entrusted their salt to the Association to sell, the British producer will appear in the world's markets as one seller of 400,000 tons, instead of 200 to 400 different sellers of 2000 to 1000 tons each. It is obvious that the weight he will carry will be infinitely greater than it is now.

Join the Association.

We therefore earnestly appeal to all manufacturers to join the Association and to entrust their sulphate of ammonia to the "Selling Branch" to sell.

The Work of the Selling Branch.

The "Selling Branch" commenced operations towards the end of September, 1914, at a time when the market was greatly disorganized owing to circumstances connected with the outbreak of the European War. The price for spot delivery at that time was about £10 10s. per ton.

The Rise in Prices.

The knowledge that a body of manufacturers, representing over two-thirds of the sulphate of ammonia annually exported from the United Kingdom, was prepared to adopt a common policy as regards prices, immediately had a strengthening effect on the market. Prices advanced steadily during the next few months, until in the spring £14 5s. to £14 7s. 6d. per ton was obtained. Given the market conditions prevailing, the shortage in production, and the fact that the United Kingdom was the only seller for export, a rise in price would no doubt have occurred in any case. But we maintain that the information which the "Selling Branch" was able to give to its members, put manufacturers in a better position than heretofore to form an opinion as to the future, and resulted in a higher level of price being maintained than would have been possible had the branch not been in existence.

In this respect the "Selling Branch" has adequately fulfilled the hopes of its founders; and, as experience and confidence are gained, we shall be able to extend the scope of our activities to a considerable extent.

It has been necessary to proceed cautiously at the beginning of a venture which marks a new departure in the history of the British sulphate of ammonia trade; and we have therefore not objected to our members selling their own make, provided they adhere to our prices. At the same time, the services of the "Selling Branch" have been at the disposal of all members, and we have frequently been able to obtain considerably better prices for parcels at a given port, owing to our knowledge that higher values were ruling at other ports. In this way, the value of a "Central Sales Office" has been demonstrated over and over again.

Association as Representative of the Whole Trade.

Owing to the many difficulties which have arisen in connection with the war, the need for a body representing the whole trade has been especially felt. The knowledge of foreign markets at the disposal of the "Selling Branch" of the Association enabled that branch to state the case for sulphate of ammonia in an authoritative manner, when exporters were faced with the possibility of having to wait several weeks for export licences. The opinion of a purely propagandist body could not have carried such weight with the Government. At the suggestion of the "Selling Branch," the authorities have adopted procedure which enables them to issue licences within a few days from the date of application. The result of this timely and successful intervention of the Association has undoubtedly saved manufacturers many thousands of pounds; for if there had been longer delays in obtaining licences, business would have been greatly restricted, and the present level of price could not have been maintained.

The "Selling Branch," then, has made a successful *début* both as a central source of information and as an organization fully qualified to represent the interests of manufacturers of sulphate of ammonia. Since the autumn of 1914, we have sold many tens of thousands of tons for our members through the usual channels, without difficulty and without disputes of any kind. In addition to this, we have been able to secure several special orders at prices which were very advantageous to our members.

At the present time several of our members have entrusted their entire production to us to be sold at our discretion. Others sell exclusively through us, stipulating that they shall be consulted as to the time of selling. The remainder continue to sell themselves, but usually consult us before doing so. Lists of minimum prices are issued at short intervals to serve as a guide to value for different periods.

In order that complete success may crown our efforts, it is essential that all our members shall not only sell exclusively through the "Selling Branch," but also that they should agree only to sell when the Selling Committee advises them to do so. We feel confident that we shall shortly be in a position to state that this is the case; and we shall then be able to adopt a stronger and more definite market policy than we have been able to do hitherto.

We shall then also be able to propound a scheme for giving all our members an equal share in the prices obtained. At present it very often happens that, owing to the fact that some manufacturers have sold for forward delivery, other makers, selling from hand to mouth, obtain better prices than those who originally supported the market. It will be the object of the "Selling Branch" to rectify these inequalities.

In concluding this brief review of the commencement of our work, we wish to draw special attention to our efforts to get British manufacturers generally to improve the quality of their make.

We think we may justly claim that our pamphlets entitled "Quality," and "Does it Pay to Make 25 per Cent. Ammonia," have, for the first time, clearly explained to makers why an improvement in quality is necessary. We have evidence that the views we have put forward are recognized as sound; and we feel convinced that in the very near future the bulk of the British production will be fully equal to the best sulphate of ammonia produced in the world.

We have on our staff an expert in sulphate of ammonia making whose services are at the disposal of our members. No charge is made for these services; and we cordially invite members to avail themselves of our expert's advice.

Work of the "Propaganda Branch."

Overseas Propaganda.

During the last few years we have extended our propaganda activities in favour of sulphate of ammonia to Switzerland, Denmark, Sweden, Holland, and Italy. Work has also been started in Egypt; and the results promise so well that we are making permanent arrangements in regard to that country which will form a very important outlet in the future. We have also examined the conditions in South Africa and India; and while the results hitherto obtained have not been very encouraging, we think that they warrant further investigation, and are making arrangements accordingly.

We are at present making inquiries in Australia with a view to opening a "Propaganda Office" in that country. In Spain, our work is progressing steadily; and sulphate of ammonia is being introduced into districts in which its use has hitherto been unknown.

Further Efforts at Home.

While we are thus paying due attention to the development of the trade in the expanding Colonial and Foreign markets, there is abundance of evidence that a far wider use of our product for agricultural purposes could be fostered in our own country; and our efforts are accordingly being conducted with increased energy to this end.

Sulphate of ammonia is peculiarly suitable as a nitrogenous fertilizer in our humid climate; and we are laying emphasis on this fact with a view—firstly, to displacing our competitors—nitrate of soda and nitrolim; and, secondly, to creating a new area of consumption.

In 1912 the quantities of sulphate of ammonia used per acre of cultivated land were in the following proportions:

Belgium.		Germany.		United Kingdom.
17·83	..	9·88	..	5·35

So it is obvious that there is room for a very considerable increase of consumption here. In order to attain this object, constant advertisements, constant experiments, and constant demonstrations are required, for the wheel of agricultural progress moves slowly, and there are many farmers to whom the value of sulphate of ammonia is still unknown.

We are, therefore, continually drawing farmers' attention to both the absolute and relative values of our salt—laying special emphasis

on the fact that sulphate of ammonia has for some time been very much cheaper, unit for unit, than nitrate of soda.

Some idea of our work at home may be gathered from the fact that we have, during the last five years, distributed upwards of 750,000 copies of various pamphlets, leaflets, and reports. In addition to these, we have laid down a large number of experimental plots: 672 in 1910, 2724 in 1912, and 3045 in 1914. Experiments were made with sulphate of ammonia on all kinds of cereals, roots, potatoes, vegetables, and fruits; and on the whole the results obtained are very encouraging. During the last five years we have offered prizes amounting to £1800, in 380 farmers' competitions, carried out by Agricultural Societies. In order to make our work more effective, we have established a separate office in Scotland, and its activities have been attended with conspicuous success. We may also state that the tonnage contributing to our Association has increased, during the five years, from 210,000 to 304,000 tons—an increase of nearly 50 per cent.; and our membership now represents over 70 per cent. of the total make of sulphate of ammonia in the United Kingdom. We are renewing our efforts, both by means of letters and by personal visits, to induce all non-subscribers to join us and contribute towards the work of propaganda which is now of more vital interest to the trade than ever before, in view of the enormous increase in the German production of sulphate of ammonia.

Fresh Lines of Inquiry.

We are at the present moment investigating a number of problems, the successful solution of which would tend to promote a more extensive use of sulphate of ammonia. Among them we may mention: The liability to lodge exhibited by cereals after applications of sulphate of ammonia as compared with other nitrogenous fertilizers; the comparative malting quality of barley; the comparative production of foliage in root crops; the economy in loss of nitrogen through drainage; and the comparative amount of nitrogenous residuum which becomes available for the succeeding crop in rotation.

We find there is a tendency among farmers to regard sulphate of ammonia as similar to nitrate of soda in respect of its solubility. This leads them to apply it too late in the season, and to disregard the varying retentive quality of soils. We are, therefore, at the present moment making experiments with a view to showing:

(1) That sulphate of ammonia may be profitably applied to wheat on retentive soils in the autumn.
(2) The latest date by which application of sulphate of ammonia can be economically made on various soils and crops.
(3) Whether it is advisable to plough-in the dressing in order to promote more rapid nitrification.

Commercial Side.

The above are a few of the never-failing supply of problems remaining to be solved by the scientific propagandist. It is obvious that if the value of the early autumnal application of sulphate of ammonia can be demonstrated, this will open up an entirely new market for the salt at home; for hitherto sulphate of ammonia has been applied most exclusively in the spring.

We are making every possible effort to induce corn factors and manure merchants to push the sale of sulphate of ammonia; and we would urge our members to be prepared to sell freely to merchants, in order that there may be an increased number of depôts throughout the country from which farmers can readily obtain supplies.

In order to minimize market fluctuations as far as possible, we have put forward a scheme with the object of inducing producers in various districts throughout the country to agree to sell at the same price for home use and to maintain the agreed price for one month after it is fixed. Prices to be fixed in each district by producers themselves.

FREIBURG CORPORATION GAS UNDERTAKING.

Report for 1914.

Freiburg, in the Black Forest, appears to be the first town of large or moderate size in Germany to publish the report of its gas undertaking for last year. [Many German towns have only just issued the reports for 1913.] In Freiburg, the output of gas up to the outbreak of war showed an increase of 5½ per cent. on the output for the corresponding period of 1913; but in the last five months of the year there was a decrease of about 3½ per cent. The result for the year's working was a gas production of 8,185,440 cubic metres [about 289,077,000 cubic feet], which represents an increase of 1·99 per cent. Of the gas made, 65·37 per cent. was sold for heating and power purposes; 21·08 per cent. for private lighting; 8·99 per cent. for public lighting; 0·20 per cent. for charging balloons; 1·09 per cent. for use on works; while 3·27 per cent. was unaccounted for.

The distinction between gas sold for heating and lighting purposes will have ceased as from Jan. 1 last, when a uniform price of 15 pf. per cubic metre [4s. 3d. per 1000 cubic feet] was introduced, in order to facilitate the substitution of gas lighting for oil lighting, in view of the scarcity of petroleum.

The war has caused many difficulties in working—some due primarily to inferior coal being supplied, and others to untrained labour having been substituted for regular hands who had been called to the colours. There were, however, no serious breakdowns or interruptions in the supply of gas; and the make per ton of coal averaged for the year very nearly the same as in 1913.

Tramore (co. Waterford) Gas-Works.—Mr. W. Gallwey, D.L., presiding at a meeting of the Tramore Public Health Committee, submitted the balance-sheet for the past year in connection with the gas-works. Receipts totalled £1160; while the expenditure amounted to £1305. The consumers numbered 219. The gas produced was 10,000 cubic feet per ton of coal; and the total production was 4,861,000 feet. The statement was considered satisfactory.

SOUTH METROPOLITAN GAS COMPANY.

The Ordinary Half-Yearly General Meeting of the Proprietors was held last Wednesday at De Keyser's Royal Hotel, Victoria Embankment, E.C.—Mr. Charles Carpenter, D.Sc., M.Inst.C.E., in the chair.

The Secretary (Mr. F. M'Leod) read the advertisement convening the meeting, and the minutes of the last ordinary general meeting.

The seal of the Company having been affixed to the "Register of Proprietors," the report and accounts [which have already appeared in the "Journal"] were taken as read.

Chairman's Address.

The Chairman: Ladies and gentlemen, I think it will perhaps be most convenient if I deal first with the least satisfactory aspects of the past half-year's accounts These are the heavy costs for the purchase and delivery of coal to the Company's stations, and the considerable extent to which we have had to borrow from our bankers, as shown under the item "Temporary Loans." I do not include in the same category the fact that the dividend for the half year will be at the rate of £4 8s. per cent. per annum, instead of £5 9s. 4d., which was the figure twelve months ago. Having regard to the terrible trial through which the country is passing, although as shareholders disappointment must be felt by us at the reduction, yet I think even this position is not so unsatisfactory from the patriotic standpoint as though we were making large profits out of the fact that the country is plunged in a terrible war, and is fighting for its very existence. We have had a good many years of regular working, with fairly constant dividends; and I do not think it could be expected that any industrial concern should have prepared itself for the great contingencies which have arisen during the last twelve months.

A Spell of Dear Coal.

Our primary difficulty has been with regard to the purchase and supply of coal, the cost of which shows no sign of receding from the high figure to which it rose as a result of the coal strike of 1912. Prior to this, our expectations, based upon many years' experience, were that coal could on the whole be purchased at a reasonable figure, and that if, owing to exceptional circumstances, the price for any twelve months rose above the average, it quickly reverted to its former level. We are now suffering from the fact that we have had three and a half years, straight off, with dear coal, and there is little or no sign of an improvement.

Price Regulation.

The application of the sliding-scale to gas undertakings took place, as many of you are aware, some forty years ago. Parliament was moved to action in the matter because some of the companies supplying the Metropolis with gas at that time, being faced with the question of the high cost of coal, promptly put up the price of gas, not only to meet this, but in order to continue the payment to their shareholders of undiminished dividends. The sliding-scale, as you are aware, is so arranged that gas companies have ever since that time had a direct incentive to keep their charge for gas as low as possible, since it is only by maintaining the low price that the usual dividends can be paid. If, owing to special circumstances, coal goes up and gas thereby costs more, the effect is shared by gas shareholders as well as by the gas consumers. I need not remind you that by the co-partnership we have had in recent years added the gas employee also. Now if these principles are right in their application to gas companies—and that they are right I think is pretty generally admitted—it does not seem illogical that coal, the raw material required for the production of gas, should be similarly treated. Parliament, it would seem, has at last realized the urgency of the matter, and a limit has now been fixed to the price to be paid for coal purchased after a certain date.

Export of Coal.

I may here tell you of our usual procedure with regard to the purchase of coal. We cannot, of course, become speculators in this article. Our practice is, and has been for many years, to go into the market in the early spring and to arrange our contracts for the ensuing twelve months. The collieries who are in the habit of supplying gas coals to us, and from whom we annually buy for large sums of money, are fully aware that this is the course we follow. Our great anxiety in settling the contracts this year, however, was not the price to be paid for the coal, but the fact that nearly everybody offered us less than had been their custom in previous years. Their explanation was that the output was largely reduced owing to enlistment, and what coal they had to spare must be shared among regular customers. If the regular customers had been entirely British, one would not have had serious complaint to make about such an arrangement. But when it is remembered that the Continent takes a large share of our coal, and that material which we were urgently wanting was going abroad—whether to neutrals or not does not matter—I think you will agree with me that it was high time the Government interfered. In fact, I do not see how any change could be made except by Government action. Take, for instance, a colliery that was in the habit of supplying one-third of its output to Great Britain and two-thirds to the Continent. It would be too much to expect it to run the risk of offending its Continental customers by going on supplying British ones to their detriment. The action of the Government in restricting export is having the desired effect. We are now filling up our stores at a rate that would have been absolutely impossible unless drastic restrictions had been enforced, even despite the fact that we did not let prices stand in the way of our purchasing.

Freight Charges.—Purchase of Ships.

With regard to the freight question, we are, as the report informs you, getting over this trouble by providing our own steamers. It may be asked, "Why did you not do this before?" Well, we certainly considered the matter, and were waiting a favourable opportunity. But we shall certainly not make a mistake in future by relying upon others to carry our coal. I am bound in justice to say that the prior arrangements were not unsatisfactory ones. Taking the average of

several years, we chartered at a fair figure, which apparently did not show a very great margin of profit.

THE TEMPORARY LOAN.

The other item which, but for some explanation, might call for adverse comment, is as to the amount of the temporary loan, £360,000. In normal circumstances, we should have sufficient floating capital—by floating I mean, of course, other than invested in buildings and plant, &c.—to enable us to carry on our business with comparatively small recourse to our bankers. But high prices and the war have hit us severely in this respect. We formerly bought coal on a schedule of deliveries which had some regard to the variation in our consumption—that is, we took heavy supplies in the winter and small ones in the summer. This suited us, because we had less gas consumed in the summer months, and therefore were provided with less money to pay for the coal we purchased. We have now had to give up this policy, as we have found it necessary to fill up our storage accommodation to the fullest possible extent during the summer. Our coal stores have proved inadequate; and we now store coal on the open ground. We have taken in the football ground; and we are filling it up with coal. When the war is over, the ground will revert to its former use; but at present it makes a very convenient receptacle for coal. This means that more money is required to lie idle in the form of coal stocks; and the difficulty is accentuated by the high cost we have to incur for its purchase and transport.

RESIDUALS.

The war has also considerably interfered with our trade in residuals, in some of which we have had to carry considerable stocks. Our stock of coke, for instance, which in the ordinary way is exported and paid for, is now lying on our hands waiting for next winter's requirements, since the Government have restricted its export. I do not quarrel with this restriction; but it means that we have in coke and other residuals a good deal of money. Another matter which has arisen out of the war, which would not have happened at ordinary times, is this. We were exporting a bye-product to America, and we had 20,000 tons on a ship that was torpedoed not far from Land's End. We had to go without the money for this for some months, until the insurance was paid. I could give you other examples of the change which has come over our business, mainly due to the altered conditions we have to meet.

ISSUE OF STOCK TO CONSUMERS AND EMPLOYEES.

In common with other companies, we have for many years made it a practice to rely upon our bankers for their assistance in meeting difficulties created in this manner, since they have usually been found to be temporary; and it was not considered good policy to raise capital, which bears a permanent charge, for requirements which happen infrequently. It appears desirable, however, that we should issue further capital, as the difficulties to which I have referred appear to be becoming more common, and it is stated farther on in the report that we are, in accordance with our Act of Parliament, offering stock to the Company's employees and gas consumers. I am afraid the loan figure will be considerably higher by next winter; but we have every reason to expect it to be down to a more normal figure before I have the honour of again addressing you in February next. There appear to be several complications in the matter of the capital issue which have only been brought to light as a result of our present difficulties, and the Board have under consideration the question of a Bill to be promoted in the next session for regularizing these matters.

RESTRICTED PROFITS ON RESIDUALS.

Before leaving the subject of the high cost of coal, I ought to add a word with regard to residual products because it has been stated somewhat fully lately that there should be more restrictions placed upon gas companies as to the amount of profit they should be allowed to make in respect of these. The answer that should satisfy everyone is, of course, that, as a result of the half-year's working, we have to be content to take a very considerably reduced dividend. With regard to coke, our practice is to charge for this a price which, taking all the circumstances of our coal purchases into consideration, may be regarded as a fair one. We have, as far as possible, endeavoured to apply the price pertaining to the sale of gas to that of coke. It would be manifestly unjust to put up the price for gas because on a cold day everybody wanted it for warming purposes. We have endeavoured to deal with coke in the same manner, and not raise the price when the snow is on the ground and the demand is at its highest. There are two other products of distillation now urgently required by the Government—viz., benzol and toluol, used in the manufacture of high explosives—and to whom practically the whole of our production is being sold. Now I can say from my own personal knowledge that whatever may be the case with regard to intermediaries or agents, the gas companies are certainly not making unfair profits out of these productions. In fact, the price we are getting for both of these important constituents of coal tar were actually fixed by a Government Committee who had the advantage of having before them the prices realized for both these materials for many years past. I happen to know that they had the figures before them, as I furnished the Committee with the data.

LIGHTING REGULATIONS AND DECREASED CONSUMPTION.

The report tells you we have had a decrease in our gas consumption of nearly 3¾ per cent. This we can trace solely to the lighting regulations put in force to diminish the amount of light in our various thoroughfares. Had it not been for these, there is every reason to believe that, despite the additional charge we found it necessary to impose, we should have had an increase, instead of a decrease, in our business.

FEMALE ASSISTANTS.

The last paragraph but one of the report refers to the employment of female assistants. Six months ago, we told you that 32 per cent. of the staff were serving with His Majesty's Forces. We endeavoured to get along without them, but at last found it necessary to arrange for the employment of substitutes; and it seemed the proper thing to look upon female labour as the best available in the circumstances. I might here say that we laid down the rule at the beginning of the war that no fresh employment was to be given to anyone except he was disqualified from the military point of view. The question arose as to what we would pay for the supplemental labour. The conclusion to which we came—and I think the right one—was that we should pay on the same basis as previously. These principles we have adopted; and the commencing rates of wages are the same with the women as with the men. What they rise to will depend upon the amount of work turned out. The reports I continue to hear with regard to the employment of women in our show-rooms and the district are in every way encouraging.

CO-PARTNERSHIP.

I must add a final word with regard to our co-partnership. In earlier and happier days it was said to us, "Your co-partnership is all very well while your bonus is high, but what will happen when it goes down?" Well, it has very seriously gone down now. Our employees are sharing with the shareholders the loss of profits, just as the consumers are sharing in having to pay a higher price for their gas. But all of them have cheerfully responded to the demands made, and although, owing to the pressure of some of the work upon which we are engaged we have had to work early and late, I am pleased to say that the service has been in every case willingly given. The cheerful spirit animating our workpeople which was so apparent in times of peace has more than ever proved its value in times which, like the present, are putting the nation through a terrible test.

I beg to move—"That the report and accounts now presented be received and adopted, and the report entered on the minutes."

The DEPUTY-CHAIRMAN (Mr. Kenneth F. Hawksley): I have much pleasure in seconding the resolution. After the full explanation given by the Chairman as to the principal items in the accounts, it is not necessary for me to go into them.

The CHAIRMAN: If any shareholder has any questions to ask, we shall be glad to do our best to answer them.

SHAREHOLDERS' CRITICISMS.

Mr. HAVELOCK WEST said he had looked carefully through the balance-sheet. No doubt, the Directors had had very considerable difficulties to contend with, owing to freightage having gone up from 3s. to 15s. a ton. With regard to the fifth paragraph of the report, which stated that, "in order to provide for the extending requirements of the business, stock to the amount of £100,000 is being offered to the Company's employees and the gas consumers," when he got his notice of the meeting, with the balance-sheet, an application form was not enclosed, and he thought shareholders had a preferential claim over consumers. He bought his shares at 120; and now the Directors were proposing to issue stock to consumers at 82. On calling at the Company's office, he was catechized as to whether he was a consumer; and on stating that he was a consumer, as well as a shareholder, he got an application form. One other remark. As this was the quinquennial year, he should like to know whether the Company ought not to get a considerable reduction of assessments.

The CHAIRMAN: Dealing with the question with regard to not letting the shareholders have notice of the issue of the new stock, I mentioned in my speech the fact that we found there were certain inconsistencies in our Act of Parliament which we want to put straight. One of them is, that we are precluded from offering the shareholders any of our stock below par. We were so concerned about the matter that we took the opinion of one of the greatest lawyers in the land; and he confirmed our view of the matter. Our shareholders would no doubt like to level-up their holdings by buying stock at the present low figure; and so equalize the high sum they paid in the past. But we could not go against the specific terms of reference in the Act of Parliament which regulates our business. That, I think, is an unanswerable reply.

A SHAREHOLDER: Do I understand that you could not issue the stock to the shareholders at par?

The CHAIRMAN: It could be offered at par. The restriction is that we must not offer any stock below par except to employees and consumers. With regard to the quinquennial valuation, of course, we are entitled to very considerable reductions in our assessment. I attended a meeting last week of one of the most important Committees who have to deal with rating; and it is perfectly clear the members were alive to the fact that they would have to effect a very considerable reduction in our rateable value. Another question has been handed up to me, with regard to the rate of dividend. I am not sure whether it is possible to rectify this; but the clause of the Act which governs our dividend says that if during any half year the price of gas is so and so the dividend shall be so and so. It does not say the "average price" of the gas is to be taken into consideration. The great increase in the price of gas was not made until the end of the March quarter; so that, unfortunately, the rise of price affects the dividend for the two quarters. The spirit of the regulation should be that the "average price" should be the governing factor of the dividend. The Act says, if in any half year the price of gas is raised, the dividend is to go down; and we are bound by that. It is certainly illogical and not just. Whether we can get it altered in the Bill which is under our consideration, I do not know; but I certainly think that it ought to be.

The motion was put and carried unanimously.

DIVIDEND RESOLUTION.

The CHAIRMAN: I have to move—"That a dividend at the rate of four pounds eight shillings per cent. per annum be now declared, and that the warrants be transmitted to the registered addresses of the proprietors by post."

Mr. JOHN MEWS: I usually, in seconding this resolution, feel great pleasure in doing so; but to-day the pleasure is a somewhat mixed one, because this is the smallest dividend that has been distributed to you since I joined the Board. In the absence of my friend Mr. Ewart, I am the senior member of the Board to-day. At the present price of our stock—viz., 83—the return is rather more than 5 per cent.; and no doubt you will say, "Why is this?" The whole financial affairs of the

country have been upset by the new War Loan, of which you have heard so much. If the Government offers stock which returns to the holder 4½ per cent., it is manifest that shares in industrial undertakings must come down in value, as the Government have set a perfectly different standard to what was in vogue before. There is one shade of blessing in the matter, which is that we have earned our dividend. I know, and I daresay you do, a good many companies that have passed their dividends altogether. We are selling something which is absolutely essential to the well-being of the country.

The resolution was unanimously carried.

The CHAIRMAN: That concludes the business of the meeting.

VOTES OF THANKS.

Mr. W. R. LEE, a shareholder, said he felt sure it would be the wish of the meeting not to separate without someone proposing a hearty vote of thanks to Mr. Carpenter and the Directors. They must all realize that the Board had passed through a very anxious and trying time; but he could assure the Board that they had the confidence of the proprietors, and he trusted when they next met the Chairman would be able to present the "better report" which he had foreshadowed that day. He had much pleasure in proposing a hearty vote of thanks to the Chairman and the Directors for their able management of the Company's affairs.

Mr. R. L. ANDREWS seconded the motion. As a fairly large shareholder, he looked on the South Metropolitan Company as the premier Company for the supply of gas, as it gave the working classes gas at a low price.

The resolution was carried unanimously.

The CHAIRMAN: Ladies and gentlemen, I can assure you, on my own behalf, and on behalf of my colleagues, that we are very grateful for this vote of thanks. If times have been trying to us, how much more trying have they been to the staff; and therefore I would propose a vote of thanks to them. I regret that our Chief Engineer, Mr. Doig Gibb—one of the kindest and most pleasant men one could meet—has so broken down in health that he has asked to be relieved of his position. A position of such responsibility in an undertaking like ours is no sinecure; and it is with great sorrow and regret I have to tell you that Mr. Gibb's strength has proved unequal to the strain. I am sure you will allow me to propose a hearty vote of thanks to the staff for their valuable services.

Mr. C. P. CROOKENDEN, in seconding the motion, said he was sure nothing could have been more trying to the Board than having to put up the price of gas.

The resolution passed unanimously.

The SECRETARY, in acknowledging the vote, said he was sure that the appreciative remarks of the Chairman—endorsed as they had been by the meeting—would encourage the staff of all grades in the Company's service to still further efforts. They had 2000 of their colleagues away fighting the country's battles; but those who remained behind were doing their utmost to keep things going, and he was sure they would continue to do so. On behalf of all concerned, he thanked them for their kind vote.

ALDERSHOT GAS, WATER, AND LIGHTING COMPANY.

The report adopted at the half-yearly meeting of the Company last Friday week stated that the total revenue during the six months to June 30 was £51,456, and the expenditure £39,785, leaving a surplus of £11,671. After providing for dividends on the consolidated preference stock, and interest on special loan and debentures, the Directors recommended the full statutory dividends of £5 18s. per cent. per annum on the "A" stock, £4 8s. per cent. per annum on the "B" stock, and 5 per cent. per annum on the "C" consolidated stock for the half year—all less income-tax. The sale of gas for all purposes had increased nearly 27 per cent. (26 89 per cent.) and the sale of water had also advanced. The output of electricity exceeded 12,000 units for the first half-year's working; and the future of this department promised to be successful. Residuals had been better; but the extra price for coal neutralized any benefit. The prospects for coal, oil, and other commodities used in the Company's various undertakings did not appear too rosy. Much work was in hand and being arranged for to meet the general expansion of the different departments.

The CHAIRMAN (Mr. W. T. Robertson, J.P., C.C.) said it had only been necessary to increase the price of gas 4d. per 1000 cubic feet, which must be regarded as eminently satisfactory. This was reflected in the dividend; for under the sliding-scale, coupled with the co-partnership scheme, the consumers, stockholders, and employees were bound together by one common principle. It would be seen that the sale of gas had increased by 26 89 per cent. over the corresponding period of 1914, for which period the increase was 11·2 per cent. over 1913. To keep pace with increases of this character entailed a great deal of anxious thought and forecast, as well as a big expenditure of capital. The increased demand for water had also necessitated provision for additional equipment. As to the electricity branch, the result of the first half-year's working, though not showing a profit, had not been disappointing; for there was every indication that the department would at an early date pay its way.

The VICE-CHAIRMAN (Dr. F. Stroyan), in seconding the motion for the adoption of the report and accounts, said he thought they might all congratulate themselves on the working of the past half year.

The CHAIRMAN, replying to a vote of thanks to the Board and the staff, remarked that he desired personally to pay a warm and well-deserved compliment to the General Manager and his staff, for the admirable manner in which they had discharged their duties—incidentally alluding to the exceptionally trying difficulties with which they had had to contend. More especially difficult had been the position of Mr. Edwards in regard to the men who had left him.

The GENERAL MANAGER and SECRETARY (Mr. R. W. Edwards) said he would like to thank the members of his staff for their energy, support, and loyalty towards him. As a matter of fact, he could not find words to convey his full sense of appreciation of their loyalty and service, for they had done their very best. He also expressed satisfaction with the result of the half-year's working of the electric department.

SOUTH SUBURBAN GAS COMPANY.

The Ordinary Half-Yearly General Meeting of the Company was held on Friday last, at De Keyser's Royal Hotel, Victoria Embankment, E.C.—Mr. CHARLES HUNT in the chair.

The SECRETARY (Mr. Wilfrid Wastell) read the notice convening the meeting; and the report of the Directors and the statement of accounts were taken as read.

COAL CRISIS EARLY IN THE YEAR, AND PRESENT POSITION.

The CHAIRMAN: It is my duty to move the adoption of the report and accounts; and, in doing so, I should like, with your permission, to give a brief account of our stewardship under the unique conditions created by the war. I may remind you that, when we had the pleasure of meeting you last February, the whole country was passing through a most serious crisis as regards coal supplies, which in our own case were reduced by about 40 per cent.; and but for recourse to carburetted water gas—which was not contemplated when arrangements were made for the year's supply of coal—the winter months could hardly have passed without mishap. This crisis culminated in a rapid advance of prices, reaching to a level much higher than had been known for fully forty years. It will be readily understood that the fixing of new contracts under these conditions was not an easy matter, especially as the advisability of varying somewhat our usual arrangements for delivery had also to be kept in view. In the result, our new coal is divided, although unequally, between sea-borne and rail-borne; and of the latter a considerable proportion is for delivery during the summer months, when in ordinary times it is difficult, owing to slackness of demand, to keep the pits fully at work. In this way, some little has been done to increase colliery output at a time when this is greatly needed; while the accumulation before the winter of a larger stock than usual ought to make the position more secure should there be, unfortunately, any repetition of last winter's troubles. Coal continues, I am glad to say, to come forward freely; and the quantity already in stock is equal to expectations.

AUXILIARY SERVICE OF CARBURETTED WATER-GAS PLANT.

Arrangements have also been made by strengthening the plant to increase the production of carburetted water gas during the winter months, should this be found necessary. The Company, I may say, have never looked with very great favour upon this gas as an adjunct to coal gas, mainly for the reason that it generally pays better to make all coal gas. On occasions, however, it can be of very great service, as it was for example during the national coal strike a few years ago, and more recently when the disposal of coke in any other way had become a matter of extreme difficulty. We turn to it now as to a friend in need; and the deliveries of oil, like those of coal, have so far been well maintained. Both coal and oil have, however, had to be paid for at such prices as could only be met by a substantial rise in the price of gas. I need not say with what reluctance the Directors came to the conclusion that a further rise of 5d. per 1000 cubic feet was inevitable, nor with what extreme pleasure we shall hail the return of more favourable conditions. I have referred first of all to the subject of supplies because of its exceptional importance at the present time, and also because it is reflected in the accounts, although not to the extent that it probably will be in the next and succeeding half years, when the full brunt of war prices will be experienced.

DEBENTURE STOCK AND INVESTMENTS.

Turning now to the accounts, attention may be directed in the first place to the appearance in the capital account of the whole of the debenture stock under one denomination—the 4 per cent. and the 3½ per cent. stocks having been converted into 5 per cent. stock, in conformity with the Company's Act obtained last year. In the next place, it will be seen that there is an appreciable improvement in the financial position; the Bank debt having been reduced during the half year from £65,000 to £25,000. This reduction of £40,000, even though it may not be fully maintained in face of the higher prices now being paid for raw materials, cannot but be of special importance just now, when there is a good deal of uncertainty as to the position of the Money Market in the near future, and while also realization of securities continues to be out of the question. Some advantage in this respect, and also in securing a better return for the investment, might have attended the conversion of the Company's somewhat large holding in Consols into War Loan Stock; but this, after full consideration, was not found to be practicable under present conditions. It will be readily understood that there has been a further depreciation of this holding; and although this is of little consequence so long as it is not necessary to realize, seeing that the income remains the same, it may perhaps be desirable in future half years to show the reserve and special purposes funds in amounts more nearly representing their present capital value; and this will probably be done.

REVENUE OF THE HALF YEAR.

On the credit side of the revenue account, the sales of gas show an increase of £15,875, which is wholly due to increase of price; the consumption having remained practically stationary, although, but for the reduction of public lighting, it would have shown an increase of about 1 per cent. A slight falling off in rents for fittings, &c., is due to the remission of rent charges for outside shop lamps during the discontinuance of this lighting—a concession which has been much appreciated. In the receipts for residuals, there is a marked improvement, notwithstanding a reduction in the quantity produced owing to the manufacture of a proportion of carburetted water gas. From this cause the receipts for tar, with only a slight falling off in prices, have fallen £1607; while, on the other hand, improved prices have more than compensated for a corresponding fall in the production of sulphate of ammonia, the receipts for which have exceeded those for the corresponding half year by £312. The net increase, therefore, for residual products (£7601) is wholly due to the great recovery which has taken place in the demand for coke—a recovery made doubly welcome by the extreme depression which was experienced throughout the whole of the previous half year. This improvement, so far from showing any abatement, has been accentuated during the summer months when production is at its lowest, and its continuance cannot but assist towards a

return to lower prices for gas. In the total receipts, there is an increase of, in round figures, £23,000.

THE METER-RENTS QUESTION.

Before leaving this side of the account, I should like to say a word or two on the subject of our recent proposal to equalize the charge for meter-hire throughout the whole of the Company's present area of supply. Since the amalgamation in 1912, there have existed three separate rates for meter-hire—viz., the two sliding-scale rates of the Bromley and Crays and the West Kent Companies, under which the charge varies according to the size of the meter, and the original Crystal Palace district flat-rate of 3s. per annum, irrespective of size. Unfortunately the latter, whatever may have been at one time the case, is now insufficient to represent the service rendered by the Company to the consumer in lieu of the exercise by him of his statutory right to supply his own meter. Otherwise its extension to the new districts could only have been a matter of time, because I must tell you that, having had the unique opportunity of observing the working, side by side, of these two systems of charging, we have come to the conclusion that the flat-rate—illogical though it may appear, and perhaps is—has, as compared with the system under which a consumer has to pay anything from a few shillings to as many pounds per annum according to the value and size of his meter, a practical advantage which could not in the interests of the undertaking be ignored. Under a sliding-scale, the consumer is apt to question the recommendation of the Company to change to a larger meter involving an increased annual cost, and to continue from motives of economy the use of one of insufficient size for his requirements, to his own inconvenience and the Company's loss. Whereas, with a flat-rate, the size of his meter is a matter of indifference to him; and it is the Company's own fault should there be any shortage of supply through the use of too small a meter. Nor is it in our eyes a demerit of this system of charging that it gives, automatically, an advantage to the large consumer. We have accordingly changed to a flat-rate in the Bromley and West Kent areas—adopting for the purpose the 6s. rate hitherto charged in those areas for a 5-light meter; and, in proposing that this rate should also apply to consumers in the Crystal Palace district, who are using meters of corresponding sizes—namely, 5-light and upwards—it did not appear to us that we were asking anything unreasonable. That this view was largely shared by consumers is evident from the great number of them who agreed to pay the extra 3s. which the change involved. Others, however, objected; and with the desire to maintain the excellent terms on which the Company have always been with all the consumers, it was decided to withdraw the proposed additional charge.

REVENUE EXPENDITURE.

On the other side of the account, the cost of coal, oil, &c., is the highest on record, although helped by the working out of last year's lower priced contracts. Altogether, including an exceptionally heavy amount for repairs, the cost of manufacture shows an increase of £18,073, to which has to be added the new item appearing lower down of £2605 for war bonus and allowances. Against these increases, there is a fairly substantial reduction in the cost of distribution; but this is not altogether a matter for congratulation, because it represents a slackening of the pace at which development has recently been proceeding. This slackening was bound to come sooner or later, with the filling-up of the new districts; but it now occurs concurrently with a falling-off in the demand for heating appliances attributable to the war. In reality, however, our progress in this respect, as also in regard to new consumers, continues to be satisfactory, and suffers only in comparison with the exceptional activity of the last two or three years. No fewer than 851 consumers were added during the half year, as stated in the report, while 1643 additional gas-stoves, &c., were fixed during the same period.

THE BALANCE AND THE DIVIDEND.

The result of the half-year's trading is a credit balance of £41,247, as compared with one of £32,235 for the corresponding half of last year; and, after providing for all interest and other charges, and restoring to the special purposes fund the amount taken from it last half year—viz., £2712—there remains a balance available for dividend of £32,862. As you are aware, the rate of dividend is entirely dependent upon the highest price charged for gas during the half year, rising or falling by 3s. 4d. per cent. for every penny charged either below or above the standard price of 2s. 9d. per 1000 cubic feet. The present price of 2s. 10d. in the Crystal Palace district—which is the highest charged by the Company in the district since 1901—being 1d. above the standard price, carries with it a dividend less by 3s. 4d. per cent. than the standard dividend of 5 per cent. This will absorb the sum of £27,789, and leave to be carried forward to next half year £5074, which, however, to the extent of £4082, is due to reduction of dividend. As compared with the former dividend of 6 per cent., the present dividend is less by £5782, which represents the full reduction per half year consequent upon the war.

REGULATION OF COAL PRICES—RATES OF FREIGHT.

For how long the present low rate of dividend may have to be continued, it would be useless to conjecture; but there can be no harm in saying that we are by no means despondent on the subject, although to what extent, if any, relief may come through the operation of the Price of Coal (Limitation) Act, cannot yet be ascertained. The Act, as you are all probably aware, was passed with the object of limiting the increase of pit-head prices during the continuance of the war, and for six months afterwards. This may have the effect of steadying prices, which would be an advantage, as enabling us to see where we stand. But the question of supply is just now one of paramount importance, and it is at all events conceivable that coalowners may avail themselves of the most advantageous outlets for their production, against which the further restriction of exports can only prove to be a partial remedy. At the present time, however, the chief concern of this Company is with excessive freight charges, which have been left untouched by the Government. It is happily true that, owing to various remedial causes, the cost of freightage is now only a little more than half what it was a few months ago; but even the present more moderate rates of 7s. to 7s. 6d. per ton represent an increase over pre-war rates of about 4d. per 1000 cubic feet, calculated on the quantity of gas sold per ton of coal carried. It is not suggested that the whole of this goes into the pockets of the shipowner, because it is well known that expenses have greatly increased. These, however, are shown by the experience of the Commercial Gas Company, as related at the recent half-yearly meeting by the Chairman, Mr. W. G. Bradshaw, to be covered by 1s. 4d. per ton, or less than one-third of the present extra charge—this being moderation itself as compared with what was charged only a few months ago, and may be again, for anything that is known to the contrary.

THE COMPANY'S WAR SERVICE.

With regard to the fifth paragraph of the report, the large number of employees who have now joined the Forces is causing some embarrassment owing to difficulty in finding temporary substitutes; and for some of the lighter kinds of work the employment of women, already successfully adopted by the South Metropolitan Company, is under consideration. Acknowledgment must, however, be made of the readiness with which those who remain have shared between them the work of their absent colleagues. This refers more particularly as a matter of course, because of the nature of their duties, to the members of the staff. Of those who have joined the Forces, four have unfortunately lost their lives, and eleven others have been wounded. In response to the letter and small gift which, at the suggestion of proprietors at the last general meeting, were sent to each employee serving with the Forces, many interesting letters have been received. [These were on the table for proprietors to look at.] In addition to the offers mentioned in the same paragraph—the offer of the Livesey Hall and Institute to the Royal Army Medical Service as a hospital, and the offer of a vacant piece of ground to the London County Council for the storage of coal for the coming winter, neither of which has yet been accepted—the Company have placed at the disposal of the Munitions Committee facilities for the manufacture of munitions, and have also taken part in the supply of additional tar products. With regard to the latter, it may be pointed out that one result of the war has been to bring into prominence the great importance of the gas industry as furnishing means for national defence; and, consequently, the necessity for encouraging rather than restraining, after the manner of what is known as the chemical clause, the activities of gas undertakers in developing the residuals side of their business. Recent events have shown that such development is of advantage to the State in times like the present; and for this reason alone, if for no other, it may be hoped that complete freedom in this respect is for the future assured.

CO-PARTNERS IN GOOD AND BAD YEARS.

Concurrently with reduction of dividend comes reduction of bonus to co-partners, which is the more to be regretted because of the assiduity and hearty co-operation of all ranks during this period of exceptional anxiety. Their share, however, of the burden imposed by the war is being cheerfully borne by them, and brings with it no weakening of faith in the system of co-partnership, the strength of which continues to be found in the community of interests and goodwill which it creates. None the less will there be on all sides great satisfaction when once more the tide turns, as turn it surely will, in the direction of larger bonuses. I have pleasure in moving "that the report and accounts, having been examined and signed by the Auditors, be received, adopted, and the report be entered on the minutes."

Mr. JOHN BORASTON said he had much pleasure in seconding the motion. It was customary for them to do this in a purely formal manner, as in view of the exhaustive and lucid statement they invariably had from the Chairman, further words were superfluous. At the same time, before sitting down, he should like to bear cordial testimony to the unflinching courage, skill, and foresight with which the Chairman had directed the affairs of the Company during the period of unexpected and wholly unparalleled difficulty. He thought they, as proprietors, had every reason to congratulate themselves upon the fact that, at this time of national stress, their interests lay in his strong and capable hands. [Hear, hear.]

The motion was unanimously carried.

The DEPUTY-CHAIRMAN (Sir Fortescue Flannery, Bart., M.P.) said that while naturally he had the greatest pleasure in moving the next resolution, he should have had much greater pleasure if he had had the duty of proposing larger figures. But there was no man in the room who did not understand, appreciate, and approve the co-ordination of the interests of all concerned. It was like the house that Jack built. The coalowner and the shipowner forced up the price of coal, the gas company had to pay more for their coal, up went the price of gas, and down went the rate of dividend to the proprietors and the rate of bonus of the employee co-partners. Everybody suffered from the extra cost of coal. The whole principle was right. The whole co-ordination was part of the system of co-partnership founded by Sir George Livesey, who, as he (Sir Fortescue) always believed, initiated a great reform in which would ultimately be found the solution of the difficulties of capital and labour. The dividend, the Directors hoped, was only reduced for a time. But there was one point in connection with the system, or rather in connection with the application of the Acts of Parliament to the system, which might possibly be amended; and this was that the change in the rate of dividend and bonus was based upon not the average price of gas during a half year, but upon the highest price of gas during that half year. It seemed to him that in future Acts of Parliament there might possibly be an improvement, by which the reduction of dividend would follow not upon the maximum price, but upon the average price at which gas was sold to the consumers during the half year. Broadly speaking, they were all more than satisfied with this system; and the privation of the proprietors in connection with it at this moment he believed was only temporary. The dividends he had to move should be declared were at the rates per annum of 5 per cent. on the preference stock and 4⅝ per cent. on the ordinary stock and on the West Kent ordinary stock, all of them less income-tax.

Mr. GEORGE ROSS (one of the Employee-Directors), in seconding the resolution, said he should like to thank the proprietors for the confidence placed in the co-partners. He was sure the co-partners were all delighted to do their duty under every circumstance, and especially under the present circumstances.

The motion was unanimously carried.

Mr. WILLIAM BROWN, J.P., in moving a vote of thanks to the Chairman and Directors, remarked that the country had been passing through a time of intense anxiety, which must have borne very considerably upon the Chairman and Directors and the officers of the Company. Notwithstanding, their affairs had been very successfully brought through the half year; and this gave them the very best basis for continued confidence in the management of the Company. From the Chairman's speech, and from what he regarded as under the circumstances a very good report, he believed that they might look forward to something better in the early future.

Mr. E. W. DREW, F.C.A., in seconding, said it must be within the knowledge of all the proprietors that the conditions under which gas undertakings had been working were in a very bad state; and therefore he thought the proprietors ought to be very satisfied that they had a Board of Directors in whom they could place implicit confidence. On the Board they had science, engineering ability, and business capacity strongly represented; and they ought to be very grateful indeed that they had a Board upon whom they could so thoroughly rely.

The motion was cordially passed.

The CHAIRMAN expressed, on behalf of his colleagues and himself, his thanks for the terms used by the proposer and seconder of the motion, and for the cordial ratification by the proprietors. It was true the Board had had an anxious time; and he did not suppose that the immediate future would be much less anxious. But the Directors were confident as to the future of the Company; and they hoped that they saw the promise of better things not far distant. He need hardly assure the proprietors that they would do their best to bring them about. He should now like to propose a very cordial vote of thanks to the officers, their staffs, and the employees generally for their exceptional services during the half year. Whatever attention a Board of Directors might give to an undertaking of this kind, they could do but little unless worthily seconded by the staff and employees generally. The Board had been so seconded; and it gave him much pleasure in asking the proprietors to make this recognition of their services.

Mr. JOHN RANDALL, in seconding, said he was pleased to hear the Chairman say in his address that the little remembrances sent to their men at the front had been received by them with pleasure, and that acknowledgments had been made. But he ventured to make a suggestion in regard to this. It was not likely the war would be over this side of Christmas; and he would like to suggest that some little present be then sent to the men who were serving in the trenches, and not leave it until after the annual meeting in February.

The CHAIRMAN intimated that he felt sure it would give the Directors very great pleasure to accede to the suggestion that had been made.

The motion was heartily agreed to.

Mr. S. Y. SHOUBRIDGE, in replying, said he was sure it would give the workmen and the engineering staff very great pleasure when they read the kind words that had been used regarding their services, and heard the hearty manner in which they had been received by the proprietors. At an anxious and difficult time like this, it was exceedingly cheering and encouraging to those who were fighting the battle of the Company in (so to speak) the trenches, to feel that they were so strongly supported by powerful artillery behind them. On behalf of the engineering staff, the workmen, and himself, he thanked them all very heartily.

Mr. WASTELL, on behalf of the secretarial staff and himself, also thanked the Directors and the proprietors for their expression of confidence and approval of the work of the staff. In the tremendous times through which they were passing, it was not easy to prevent the fog of war obstructing the clearness of vision. From conversations he had had with several members of the staff he was certain that, as far as the path of duty laid—duty both to the Company and the State—every member of the staff had a very clear vision as to where his steps should go, and would follow that path to the very end.

EASTBURY PUMPING-STATION OPENED.

New Works of the Colne Valley Water-Works Company.

In brilliant weather, and with a large attendance of Directors, officials, stockholders, and friends, the formal opening took place last Tuesday afternoon of a pumping-station which has lately been erected by the Colne Valley Water Company in Eastbury Road, Watford, about one-and-a-half miles from the Bushey works.

It may be stated that the Company was constituted under an Act of 1873, for the purpose of providing and maintaining water-works for the supply of Bushey, Pinner, Stanmore, Edgware, parts of Harrow-on-the Hill and Hendon, and other districts in Hertford and Middlesex. Of the promoters, Mr. Charles E. Keyser, J.P., D.L., the present Chairman, is the only one who is now associated with the Company; and his record, as is truly remarked in a souvenir pamphlet which was distributed among the guests, has been one of untiring energy and zeal in the interests of the concern. The powers of the original Act enabled the Company to construct pumping and softening works at Bushey, with a service reservoir at Bushey Heath, and the laying of the necessary mains for conveying water to the places to be supplied. The works were designed and carried out under the superintendence of the late Mr. J. F. La Trobe Bateman; the Contractors for the well, buildings, reservoirs, and pipe-laying being Messrs. Lucas and Aird, while the engines and boilers were supplied by Messrs. James Watt and Co. Under an Act of 1885, the Company acquired the undertaking of the Harrow Water Company; and the area of supply was extended, as it was again subsequently, in 1894.

Glancing first at the Bushey works, these now comprise four powerful "Woolf" compound condensing rotative beam-engines, each capable of dealing with approximately 2 million gallons of water per 24 hours, four large Lancashire boilers with superheaters, and softening reservoirs capable of treating 6 million gallons of water per day by Dr. Clark's lime process. The main service reservoirs, which are situated at Bushey Heath, have a top-water level 515 feet above Ordnance datum, with two standpipes and a high-service tank, from which the consumers in the Company's district of 76 square miles are supplied by gravitation. There are also subsidiary service reservoirs at Wembley and Shenley.

The works in connection with the Eastbury pumping-station, which were commenced in 1911, consist of two engine-houses and a boiler-house. The main engine-house is 80 feet long by 54 feet wide and 51 feet in height from basement to eaves; and it has been designed to receive three powerful beam-engines. The second engine-house is 45 feet long by 22 feet wide and 14 feet in height to the eaves; while the boiler-house is 53 feet long by 45 feet wide and 21 feet in height to the eaves. The engine which was named and started last Tuesday is a "Woolf" condensing rotative beam-engine supplied and erected by Messrs. Hathorn, Davey, and Co., of Leeds; and it is capable of raising and delivering 2 million gallons of water per 24 hours into the Bushey softening reservoirs. In the smaller house there is to be seen one of the Company's original engines—a horizontal non-condensing single cylinder engine constructed in 1874 by Messrs. James Watt and Co. This is being retained as an auxiliary engine. There are in the boiler-house two Lancashire boilers, each 30 feet in length and 7 ft. 6 in. diameter, fitted with Musgrave superheaters, supplied by Messrs. H. & T. Danks, of Dudley.

After the visitors had assembled around the door of the main engine-house, the Vice-Chairman of the Company (Mr. A. Helsham-Jones) remarked that in times past when the undertaking was started, the promoters certainly had before them a beneficent object; for at that period there was a great want of pure water in the neighbourhood. The aim of supplying this need was very quickly attained; but to the promoters it was not a very encouraging business just at first. For some years there was no return for their outlay, though there was a return for their efforts, as it was a good work. On behalf of the members of the Board, he asked the Chairman to formally open the buildings, and presented him with a gold key, with which to perform the ceremony, and as a memento of the occasion.

Mr. Charles E. Keyser, before using the key, explained that the engine they were about to see was the first of two which were actually in hand; and no doubt before long there would be three fine engines in the house. They would, of course, not require to be so large as those at the old station, because all they would have to do would be to raise the water from the earth and pass it on to the softening reservoirs at Bushey. As a matter of fact, the foundations for the second engine were already prepared; so that all round them were signs of the progress the Company were making. He then opened the door, and on entering the house was asked by Mr. Charles T. Part (a Director) to name the new engine "George V.," and to start it to work. Complying with this request, the Chairman remarked that the name of the second engine would be "Queen Mary." On the invitation of the Vice-Chairman, Mrs. Keyser next unveiled the entablature plate containing the names of the Directors and chief officials who had been associated with the enterprise. A vote of thanks was then heartily passed to the Chairman and Mrs. Keyser, on the proposition of Mr. F. E. Marshall, seconded by Mr. E. H. Loyd (Directors of the Company); it being remarked that the prosperity of the concern was in great measure due to the immense amount of work which the Chairman had for many years done for the undertaking. After singing the National Anthem, the company adjourned to a marquee for tea.

Here Mr. Keyser gave an interesting account of the early history of the Company, recalling many important and amusing episodes in connection with it. He pointed out that things did not run very smoothly during the period of the promotion of the Company. Great opposition, for one thing, was raised by those who had rights over the River Colne. There was also much excitement over the subject of the alleged danger of dealing with underground water; and many experts were called in to prove that mischief would be caused by the Company tapping the deep springs in the chalk. He maintained, however, that the continuous growth in the population of the district was to no small extent due to the excellent water supply which they enjoyed. For many years the shareholders received no dividend; and naturally the Directors would take no fees. But fortunately this state of things was in time entirely altered. In connection with their present happy condition, he remarked on the fact that, acting on skilled advice, they had during the last few years always managed to keep ahead of their requirements, both in the matter of the amount of water available and in the means of raising, softening, and distributing it. In the earlier years of the history of the undertaking, it was necessary on many occasions to send the inspectors round the district to warn customers to be economical in the use of water; but now, with the increased number of the Company's wells, and especially the acquisition of fresh ground at Eastbury, they might feel secure as to the sufficiency of the supply of water for many years to come.

Referring to the staff, the Chairman said that Mr. Blackburn, their Engineer, who had done excellent service for the Company, and whose mechanical knowledge had proved of the greatest assistance, was found out by him at Canterbury, more than forty years ago. Unfortunately, indisposition prevented him from being present that day to meet the shareholders. Their Consulting Engineers (Messrs. John Taylor and Sons) had also materially helped to bring the undertaking to its present prosperous condition. In their Secretaries, they had been equally fortunate. First there was the late Mr. Philip Verini, and then his son William, who retired owing to ill-health in 1910, and was succeeded by Mr. C. Purves Sinclair (the present Secretary and General Manager), who was introduced to them by the late Mr. W. B. Bryan, the Chief Engineer to the Metropolitan Water Board. Mr. Sinclair's appointment had satisfied their highest expectations. The wonderful manner in which he had managed from the first to obtain a grasp of the Company's affairs, his mechanical knowledge, the energy with which he had carried out his duties, and the tact and ability with which he had conducted some very delicate negotiations, all proved him to be the right man in the right place. The staff had, of course, been depleted by men joining the forces, which necessitated the work being carried on at high pressure.

After referring to the original members of the Board and the present representatives, he concluded by expressing the hope that, "when this terrible war is over, and normal conditions once more prevail, the success of the Company may continue unimpaired for many generations to come."

WIDNES GAS UNDERTAKING AND THE RATES.

A Bill to Authorize the Allocation of Profits.

A proposal was carried at the meeting of the Widnes Town Council last Tuesday, to promote a Bill to permit, under certain circumstances, the allocation of gas profits in aid of the rates—a power which the Corporation do not at present possess. The matter arose on a resolution of the Finance Committee—"That the Town Council do promote a Bill in the ensuing session of Parliament to amend section 102 of the Widnes Improvement Act, 1867 (Application of Gas-Works Fund), in such manner that the surplus of such fund may, after providing for sinking fund and interest, be carried to the general district fund of the Town Council under, and subject to, the conditions now explained by the Town Clerk, and such incidental and other matters as may hereafter be determined upon; and that it be referred to the General Purposes and Parliamentary Committee to take all necessary steps in the matter."

Alderman S. OWENS, in moving the adoption of the Committee's minutes, said that over a year ago the Finance Committee presented a similar resolution; but with a view to giving members more time to consider the matter, it was withdrawn. The position in regard to surplus revenue from the gas undertaking in Widnes differed from every place of importance in England. They were shackled in their method of its disposal, and had no liberty of action. The surplus, notwithstanding any altered or special circumstances calling for exceptional treatment, must at present be applied to the reduction of debt, and to that only. So long, therefore, as there were outstanding loans, the surplus was unavailable; and inasmuch as the gas-works debt was always liable to increase as extensions occurred, notwithstanding the large amounts that were from time to time repaid out of the sinking fund, it was quite clear that the day when the debt would be paid off was so far distant that it was a factor which might be disregarded for all practical purposes. They wanted, therefore, as far as possible, to be in a position to have greater liberty of action, and to apply their surplus to purposes which would be of value to those who were now living and assisting by their efforts and the provision of money in the shape of rates to maintain and build-up a sound financial and prosperous Widnes. To bring this about, they wanted to repeal an obsolete and technical section of an Act of Parliament which had, at all events, served its purpose, and replace it by a modern provision which would, without prejudicing the gas consumer, assist in the greater development of the borough. This they proposed to do by providing for maintenance and improvements; for the payment of interest and sinking fund; and for the building-up of a reserve fund to the extent of 10 per cent. of the capital of the undertaking. After these provisions, the balance would go to the general district fund. All this was subject to the important qualification that if, and when, gas cost the ordinary consumer in the borough more than 1s. per 1000 cubic feet, then the amount to be taken should not exceed £2500 in any year. What could be fairer than this? There were, indeed, some who would prefer to get rid of the latter limitation, and leave the powers of the Town Council unrestricted. The Finance Committee were, however, advised that it would probably excite hostility, and bring about opposition, if they proceeded upon other lines than those proposed, which, he believed, were strictly in accordance with precedent. They had therefore considered it expedient to limit their proposals in the manner stated; and they believed they had evolved a reasonable working arrangement which must commend itself to reasonably minded persons. In 1867, Widnes was a different place from the present town; it was small, and governed by a Local Board upon which owners had a commanding influence. It was at the time most desirable, as it was now, that the price of gas should not be raised to an extent to injure their trade, which was then in an early stage of development. Electricity as a domestic adjunct and power factor was unknown. There were consequently no means of providing for the necessities of the case, except by the monopoly they themselves created, which it was foreseen might not always be controlled by the owners. The provision under these circumstances was not altogether unreasonable; and as a policy it had in the past produced good results. The position was, however, now quite different. Besides having expended large sums for extensions out of profits, they had about £4000 of unappropriated surplus profits. The gas supplied was round about 500 million cubic feet per annum. Another factor was that since the 1867 Act had been framed practically a revolution had taken place in the manufacture of gas, and more particularly in the prominent part in the profit and loss account taken by residual products. The net profits during a period of twelve years ending 1914 amounted to £58,603, or an annual average of £4883 or thereabouts. During this period gas had been sold at a very cheap rate—far below anything that could have been contemplated in 1867—the amount now charged being as low as 1s. per 1000 cubic feet for domestic supply and 8d. for power. In consequence of the vast improvements carried out at the gas-works, they had legitimately expected, not only to maintain, but to increase, the amount of the profit realized. At present it was true that, in consequence of the war and the increase in the price of coal, together with a downward tendency of residuals, they might probably not realize their most sanguine expectations for some short time to come; but they were satisfied that when things returned to normal they would find themselves in their old position of, while supplying gas at the cheapest rate, realizing very substantial profits. In the meantime, they had got to do the best they could and face the position. The figures for the year 1914-15 had not yet, he understood, been considered fully by the Finance Committee; but there was reason to believe that the profit would fall far below the average—indeed, they feared a sufficient sum would not be realized to cover the cost of public lighting. This deficiency would consequently fall upon the general district fund, and have to be met by the rates. It would be seen that the alteration did not, in fact, affect or alter any vital principle; and it was put forward upon the ground of expediency. It was really little more than replacing a cumbersome and difficult clause by a plain and intelligible provision. If the resolution were adopted, the Bill itself containing the necessary clauses would have to be submitted twice to the Council and to a public meeting of inhabitants for approval before Parliament would entertain it. He proposed the confirmation of the minutes, and he appealed to all reasonable people to leave themselves free to do the best they could in the interests of the gas-works and of the Corporation.

Alderman H. S. TIMMIS (speaking as the Chairman of the Gas Committee) remarked that he might describe himself as being in the position of Balaam or his ass. What he had to say about the present proposal was this: He approved of the old Act, and had in no way changed his view that to the old Act had been due the success of the gas undertaking. He therefore objected to the principle of the present proposal *in toto*. It had been said that Widnes was different from all other towns in the country. In answer to this, he would say that the position of the Widnes Gas Department was different from every other place in the country under the existing arrangements. They could imagine a time when the price of coal might be such, the price of residuals such, and the profits so high that they could afford to supply gas gratis—in fact, pay people to take it. This showed that the principle could be stretched. The point which he had in mind, however, was whether the principle which had been so successful in the past was really applicable to the present state of Widnes. He was trying to find what he believed was a Jesuitical method of reasoning—a justification of "doing evil that good might come of it." He was, in fact, trying to find a reason for changing his opinion; and in this connection he found that there was the blessed word "expediency." And as a matter of expediency, he was prepared to think that there was something in the proposals of the Finance Committee. They had hitherto used the price of gas as an inducement in advertising the town as a centre for manufacturers. This argument, however, did not hold good to-day, because they had gas at a price which was lower than any other place in the country, and there was consequently no object to be attained in reducing it further. They had to face the fact that electricity had come to stay, and that it was an illuminant and motive power which many manufacturers required. The necessity for gas of cheaper price, therefore, disappeared. Then, again, the advantage which the price of gas offered to manufacturers could be offset if the rates of the town were continually rising. Having got the advantage of cheaper gas, it was time for them to consider if it was possible to reduce the rates. In the proposals the Finance Committee had brought forward, he thought they had safeguarded the interests of the gas consumer very satisfactorily. The amount which could be taken from the profits in any one year, and, of course, the powers to be obtained, would only operate when there were profits to deal with. From this point of view, the present discussion was a purely academical one.

Mr. D. WELDING said that so far no reason had been given why the matter should be brought forward at this particular moment. It had been stated that no profits were likely to accrue during the coming year; and if this were so, why should they spend a large sum of money in getting the proposed powers? Would it not be better to defer the matter until the war was over and profits were again available? He moved that consideration of the question be deferred until peace was declared.

The MAYOR, however, refused to accept the amendment; and Mr. Welding left the chamber.

Alderman NEIL said that he believed in the principle of the recommendation. He also believed that many others were of the same opinion. But some of them had a special reason for leaving this over in the present serious circumstances. It would be for the benefit of all to pass the clause, which had been before the Council so long. Last year they agreed with the principle, but deferred it.

Mr. TURTON remarked that they had it from Alderman Owens that this matter had been before the Finance Committee, and had been well discussed. Unfortunately, the matter was not discussed at all. He had been waiting patiently for twelve months for information on the subject. As far as he could see, it was not the gas consumers who would benefit by the Council obtaining the powers proposed, but the users of electricity. They would have their rates relieved as a result of gas consumed by other people. It had been said that there were no profits at the present time. He went further, and would say that there would be no profits for the next five years. The Gas Committee had learned in the past few weeks from the Gas Engineer (Mr. Isaac Carr) that he anticipated a loss on the department this year of about £5000. He was prepared to move that the matter be referred back.

Alderman WOOD urged that this was not an opportune time to proceed with the matter. At the last meeting of the Gas Committee, it was intimated that they would shortly have to consider the advisability of increasing the price of gas 3d. per 1000 cubic feet.

The MAYOR remarked that the proposal to defer the matter need not weigh very much with them. If the principle was right, let them adopt it. Just for the present position the thing might be put in the following few words: They might appropriate the gas profits to the general district fund when there was no debt on the works. The proposal in the resolution was that they might transfer surplus profits to the general district fund as long as gas was 1s. per 1000 cubic feet or under. It recognized the price limit rather than the debt limit. The debt limit had been the principle in the minds of their ancestors. Gas was now about one-fourth the price it was when they made these arrangements. The result of the change would be that: (1) The cost of lighting would be secured by a clearly drawn clause; (2) consumers would be protected against an oppressive advance of prices; and (3) the general district fund would, during the time that gas was cheap, be enabled to promote progress in other directions in their civil life. He was satisfied that through this proposal a greater measure of progress in the town might be registered. High rates, as Alderman Timmis had pointed out, would be a menace to the town's prosperity. This proposal would secure cheap gas, and would make it possible to give ease also to the rates of the town, and without prejudicing the conditions of the consumer. He submitted that in fifty years Parliament would be willing to listen to a proposal to sweep away all restrictions. But it would not be so easy for this to be done if in a new Act of Parliament they embodied a clause securing the consumer's interests at a maximum price of 1s. before surplus profits could be used. Let them mark that there was nothing to prevent gas being brought down even cheaper than 1s. per 1000 cubic feet, It was not the proposal to relieve the town of all rates. It could only hope to work hand in hand with

cheap gas. He was confident that it was a proposal in the right direction; and though it did not lift the dead hand altogether, yet it did relax the grasp to some extent.

Alderman SMITH said he could not understand why there should be such grabbing of profits, or why they should be diverted to the relief of the rates.

Mr. MILLAR pointed out that the aspect of the question which appealed to him was that under existing arrangements it was impossible for him, as a representative of the people, to have a voice in the disposal of the gas profits.

Alderman OWENS, in reply, said there were no grabbers. The one before them was the most conservative proposal which had ever been introduced into that chamber. It was possible there had been opposition in other places to diverting gas profits; but the opposition was caused by the absence of proper restrictions. In the proposal before them, there were restrictions. He appealed to them not to delay the matter, but to embrace the opportunity which presented itself.

On a vote being taken, the proposal was confirmed; only five of the members voting against.

GAS PROFITS IN AID OF THE RATES.

Principal Graham on "Municipal Mistakes."

Principal J. W. Graham, of Manchester, a member of the Committee of the Coal Smoke Abatement Society, contributes an interesting letter to a Manchester newspaper dealing with the subject of "Municipal Mistakes"—the relation of gas profits to city finance being especially alluded to.

In the course of his argument, Principal Graham states that the "obtaining of revenue indirectly by charging a high price for gas is open to almost every kind of objection. It is deceptive, inequitable, wasteful, and the main hindrance to sunshine and cleanliness in the streets where the poor live. 'Deceptive,' because some financiers seem to think they escape payment if they pay through their gas bill—like getting presents at a tea shop. 'Inequitable,' because the use of gas and electricity bears often little relation to rateable value. The man who confers a public benefit by making no smoke for his neighbour's consumption, and uses gas or electricity for power, or for cooking or heating, pays an extra rate by this wonderful civic policy. The rate varies from a 3d. rate or less, up to a 2s. rate, on small premises using power. Broadly, the owners of cottage property who pay the rates upon them profit, and the cottagers, as well as the large users of light, suffer. 'Wasteful,' because on the bogus gas profit, now £50,000 a year, the city pays enormous income-tax before taking the money for the rates. This loss alone is now enough to pay and maintain the sinking fund or two city parks; and it is absolutely gratuitous and indefensible. This is, however, but a trifle compared with the loss produced by smoky air, for which gas and electricity are the only immediate cure on a large scale. We waste annually in Manchester not less than £1,000,000 on smoke, in unburnt fuel, dirty clothes, darkness and artificial light, soap, paint, whitewash, renewals of metal and stone work, doctors' bills, asthma, pneumonia, and consumption, and endless toil for the self-respecting woman of the working class, who never ceases to 'clean up' her whole life long. Yet our City Fathers go on, not daring to tell the ratepayers plainly how much is being spent, mere timid watchers upon public opinion, or never looking an inch further than the mere rate. The Finance Committee appear to be a sort of rival firm to the Gas and Electricity Committees, only anxious to get something out of them. We badly need a municipal statesman. I believe if one or two reactionaries were unseated on this issue, the conversion of the rest would be rapid; but, I fear, not till then. At present there is no gas profit, but a loss. Nevertheless, the £50,000 has to be paid out of this loss. The Corporation ought also, by experiment, to find, or learn, the best way to make a smokeless fuel—thus following the example of Glasgow. One bye-product would be a high quality of gas. Other bye-products would be petrol, or its equivalent, and sulphate of ammonia, a much needed manure, by which our home food supply could be increased. At the present moment, the sulphur goes up the chimney and chokes our throats in the days of fog it helps to produce; and we seem to love to have it so."

COLNE VALLEY WATER COMPANY.

The report submitted at the half-yearly meeting of the Company—which was held at New Bushey last Tuesday, under the chairmanship of Mr. C. E. Keyser—stated that the expenditure on capital account during the six months ended June 30 amounted to £1656, which included payments in respect of new works at Bushey at the Eastbury pumping-stations, as well as extensions of mains required for affording new supplies to consumers. These extensions of mains brought the total mileage in the Company's area to 277. Supplies had been provided for the erection of 227 buildings; while 243 new supplies had been added to the Company's books. To meet the growing needs of the district, a contract had been entered into for a second beam-engine at Eastbury. The profit in respect of the revenue account amounted to £16,466. The balance of the dividend and interest account, after paying the interest on debenture and preference stocks, and transferring £1500 to the contingency fund, was £26,379. Out of this balance, the Directors recommended the payment of the full statutory dividends at the rate of 10 and 7 per cent. per annum on the several classes for ordinary stock, and in addition the payment of 1 per cent. (actual) on account of back-dividends on the "A," "B," and "C" stocks, leaving £12,550 to be carried forward.

In the course of his remarks to the shareholders, the Chairman pointed out that the total amount of water-rates for the period under review was £29,371, which was an increase of £489 when compared with the corresponding half of the previous year. This was not so large an increase as the Company had enjoyed on many past occasions; but for this the war was entirely responsible. They had, however, recently noticed signs of a revival of business; for the percentage of empty properties had never in the Company's history been so low. The revenue expenditure had been rather largely affected by the high prices of material; the total expenditure being £1589 more than in 1914, though of this income-tax accounted for £991. The Secretary (Mr. C. P. Sinclair) had last year reduced the bad debts to the small amount of 2s. 2d. per £100. Unfortunately, he had not succeeded so well in the period under review, though the amount had only increased to 2s. 5d. per £100, a figure which really was remarkably low when consideration was had to the exodus of the subjects of their enemies from the district—in many cases without paying their water-rates. The average daily supply per head of the population for all purposes was nearly 30 gallons. Since the last meeting, the staff had continued their voluntary work of safeguarding the works at Bushey, and were performing this service in a spirit of great devotion and loyalty to the concern. Many of the staff were actively serving their country, being dispersed in the quarters of severe fighting; and it was with no small amount of satisfaction he reported that no harm of any kind had befallen them. One of the Directors, however—Mr. S. J. Blackwell—had recently lost a son, who died of wounds received at the front.

When the adoption of the report had been seconded by the Vice-Chairman (Mr. A. Helsham-Jones) and agreed to, the dividends recommended were declared, and a hearty vote of thanks was passed to the Chairman and Directors (on the proposition of Mr. James L. Chapman, seconded by Mr. F. J. Bancroft). It having been announced that the Resident Engineer (Mr. John Blackburn) was somewhat seriously unwell, a vote of sincere condolence with him in his illness was unanimously passed.

This concluded the proceedings at the meeting; and those present were then conveyed to Eastbury Road, to witness the opening of the Company's pumping-station, as recorded elsewhere in this issue.

NEW WATER-MAIN AT PLYMOUTH.

The proposal of the Plymouth Water Committee to lay a second pipe-line from the storage reservoir at Burrator to the service reservoirs at Roborough, at a cost of £60,000, came before the Town Council yesterday week.

Alderman R. W. WINNICOTT (the Chairman of the Water Committee) explained that the mains between Roborough and Plymouth had been duplicated, but the means of conveyance between Burrator and Roborough remained inadequate. In 1893, when they obtained power to lay the present 25-inch pipe, they secured sufficient land and the necessary easements for a second line of pipes. The Committee strongly recommended in 1913 that the second pipe should be laid; but the matter was postponed because amalgamation with Devonport was then under consideration. Now a considerable portion of the Devonport area was supplied direct from Plymouth, and the Devonport reservoir had to be kept as far as possible for the Dockyard consumption, which during the last two years had increased enormously. The matter was one of national importance, affecting the navy and shipbuilding; while, owing to the large influx of troops, the increase in the consumption of water had been as much as it would be with ten years of normal growth. It had been intended to construct a masonry pipe surrounded with concrete in the bed of the leat; but this scheme had been abandoned, and it was now proposed to lay a 33-inch cast-iron main along the same course as the existing main. The cost of iron pipes had increased only 5 to 7½ per cent. during the war, whereas the price of cement had nearly doubled. Parliament had granted sixty years for the repayment of the cost of the main; and roughly it would require the proceeds of a halfpenny rate to cover interest and sinking fund. He believed, however, that the increased consumption in the services would go far to relieve, if it did not altogether obviate, this charge upon the rates. In 1910, the Admiralty took 349,000,000 gallons of water, for which £5718 was paid; while last year they took 522,000,000 gallons, and paid £10,322.

Alderman BLACKALL, who seconded the resolution for the adoption of the Committee's recommendation, said it would take nine months to carry out the work, and it was absolutely necessary that it should be proceeded with at once. The annual charge for interest and sinking fund would be £2768.

Alderman DEBNAM proposed that the recommendation be referred back to the Committee. He expressed the opinion that labour would not be obtained for the work, and that the pipes would cost £2 each more than if they waited until after the war. He referred to leakage now supposed to exist in the leat.

Alderman LITTLETON said he had asked the Water Engineer (Mr. F. Howarth) if he would take the responsibility of maintaining the supply if the work were not done; and he said absolutely, "No." If they were to maintain the supply to the Government establishments they must bring more water into the town. The Government had seen the necessity for this work being done; and for this reason the Admiralty did not oppose the Bill, and the Treasury gave them sixty years for the repayment of the money.

Several members supported Mr. Debnam's view that the leat might be repaired, and made available for use to supplement the supply conveyed by the existing main; but on a division the Committee's recommendation in favour of proceeding with the work was carried by 29 votes to 19.

The TOWN CLERK, replying to a suggestion that it was unfair to the bondholders to use the sinking fund in the way proposed for the work, said this matter had been threshed out before the Parliamentary Committee. The Local Government Board said that the security of their creditors was complete. This expenditure was exactly the same thing as borrowing the money in the open market, so far as the holders of their securities were concerned.

The rate of wages of Birmingham gas-fitters has been advanced from 9d. to 10½d. per hour. In the case of men employed by the Corporation Gas Department, the advance is retrospective to May 18.

GLASGOW CORPORATION GAS SUPPLY.

The Accounts of the Department for the year 1914-15.

We have received from Mr. Alex. Wilson, the General Manager of the Gas Department, a copy of the forty-sixth report to the Corporation of Glasgow by the Committee on Gas Supply, with the accounts for the year from June 1, 1914, to May 31 last; the former bearing the signature of the Convener (Mr. T. J. Irwin), and the latter the signatures of the Convener of the Sub-Committee on Finance (Mr. Hugh Alexander) and the Treasurer (Mr. James Fleming). The following are the salient features of the report.

Finances.

Dealing first with finances, the Committee show the position by the following tabular statement:—

The gross revenue amounted to		£1,047,773 1 8
The gross expenditure to	£891,889 17 6	
To which is added depreciation written off capital assets	19,901 10 6	
		911,791 8 0
The balance carried to profit and loss account being		£135,981 13 8
The Committee had to meet the following requirements during the year:—		
(1) Annuities on stocks	£20,989 12 5	
(2) Contribution to Glasgow Corporation loans fund, in respect of Glasgow Corporation 3 per cent. stock redeemable in 1921, issued in lieu of converted gas annuities	7,788 4 5	
(3) Interest on borrowed money, &c.	35,665 4 7	
(4) Sinking fund	66,275 4 4	
European War—allowances made to employees who have joined His Majesty's Forces	7,918 5 4	
		138,636 11 1
Leaving a deficit on the year's operations of		£2,654 17 5
This has been met as follows:—		
The balance at the credit of the surplus revenue account at the close of the last financial year was		£7,730 14 9
Deducting the deficit above referred to		2,654 17 5
Leaves to be carried forward		£5,075 17 4

The interest payable to the Corporation loans fund in respect of money borrowed was at the rate of £3 5s. per cent., compared with £3 6s. per cent. for the preceding year.

The Committee applied £3820 10s. 4d. of the amount at the credit of the sinking fund to the extinction of £1685 of 9 per cent. gas annuity stock; and the annuities formerly payable upon these stocks now cease to be a charge upon the revenue of the department. There was also redeemed during the year, by the application of moneys at the credit of the same fund, a further amount of £80,000 of loans raised under the Glasgow Corporation (Tramways and General) Order Confirmation Act, 1905. The amount added to the sinking fund for the redemption of annuities, loans, and 3 per cent. stock was £67,431 14s. This includes £1156 9s. 8d., the accumulations of the unappropriated portion of the sinking fund during the year. The sinking fund, with its accumulations, now stands at £1,192,304 4s. 4d., of which there has been applied in the redemption of borrowed money, 3 per cent. stock and annuities £1,170,562 8s. 4d.; leaving available for either of these purposes the sum of £21,741 16s.

Working Statistics.

Turning to the working, the Committee express their regret that the market for residuals was unfavourable to the Corporation during the past year. Notwithstanding the greater quantity of coal carbonized, the diminution of income from this source amounted to £25,708. The average price received per ton of coal carbonized was 4s. 1·285d., compared with 4s. 11·436d. for the previous year—a decrease of 10·151d. per ton. The net sum realized from the sale of coke amounted to £133,738; being £11,755 less than that of the preceding year. The total quantity of coke sold was 367,364 tons, compared with 307,984 tons before—an increase of 59,380 tons. The average price received was 8s 2·956d. per ton, compared with 9s. 7·911d. for the previous year—a decrease of 1s. 4·955d. per ton.

The quantity of coal carbonized in the year was 811,356 tons, compared with 781,066 tons in the year 1913-14—an increase of 30,290 tons. The average price paid for coals bought last year was 11s. 5·85d. per ton; being a decrease of 1s. 9·15d. per ton compared with the preceding year. Contracts have been made for the supply of coals during the current year at an average price of 16s. 9·532d. per ton; being an increase of 5s. 3·682d. on the previous prices.

The gas made per ton of coal carbonized was 10,284 cubic feet, compared with 10,386 cubic feet for the preceding year. The quantity of gas delivered and accounted for amounted to 7,693,226,219 cubic feet, compared with 7,469,436,602 cubic feet for the preceding year—an increase of 223,789,617 cubic feet, equal to 2·97 per cent. The greatest quantity sent out during the year in 24 hours was 38,663,000 cubic feet. The maximum daily make was 34,213,000 cubic feet. The unaccounted-for gas was 7·796 per cent., compared with 7·928 per cent. for the preceding year—a decrease of 0·132 per cent.

Distribution, Etc.

After giving a long tabular statement showing the sales of gas in the various districts of the city and suburbs in the past and the preceding year, the Committee turn to matters connected with distribution, and furnish the following particulars.

Gas-Meters.—The number of ordinary meters in use on the 31st of May last was 195,557, compared with 202,303 for the preceding year—a decrease of 6746. The number of prepayment meters in use on that day was 97,461, compared with 88,008—an increase of 9453, and giving a net increase of 2707 meters. During the year, 36,565 meters were repaired, and 8216 ordinary ones were converted into prepayment meters.

Gas Cooking Appliances.—The demand for domestic gas cooking appliances was maintained during the year. On May 31 last there were on loan 124,825 cookers and range fittings, 25,473 grills, and 47,358 boiling-burners—a total of 197,656, compared with a total of 172,152 for the preceding year.

Gas Heating Appliances.—The improved appliances now produced by the various makers have greatly stimulated the more extended use of gas heating appliances, both for domestic and manufacturing purposes. The number of gas-fires on hire on May 31 last was 42,281—an increase of 17,941 over the preceding year; and the number on hire-purchase was 3198. The number of radiators on hire was 3399.

Gas Water-Heating Appliances.—The moderate cost and convenience of the new water-heating appliances for domestic purposes are meeting with much favour and interest from consumers. At May 31 last, there were 104 on hire-purchase and 323 on simple hire. In the preceding year, the number on hire-purchase was only 81.

Gas-Engines.—The number of gas-engines in use, and the total brake-horse-power, for the past and the preceding year were as follows:

	Number.	Brake-Horse-Power.
May 31, 1915	1294	19,530½
May 31, 1914	1372	19,804½
Decrease	78	274½

Mains.—About 7¼ miles of new mains were laid during the year, which brought the total up to 1064 miles.

Works and Mains.

The works and mains have been maintained in an efficient condition during the year out of revenue.

Price of Gas.

In consequence of the abnormally increased prices for coal and other gas manufacturing commodities, and keeping in view the state of the market for residual products, the Committee recommend that the price of gas be increased (1) by 7d. per 1000 cubic feet to all classes of consumers within the city supply district and the supplementary supply district within the parish of Old Kilpatrick, (2) within the supplementary supply district outwith the parish of Old Kilpatrick, 50 per cent. extra—the increase to take effect as from the date of last survey.

Work of the Staff.

The Committee conclude by expressing their pleasure that, notwithstanding the extraordinary conditions brought about by the war, the diminution of available labour, and the extraordinary demands placed upon the department, the whole staff have responded magnificently to every call. They also desire to place on record the retirement of the Treasurer (Mr. Fleming) after 46 years of faithful and efficient service. He carries with him in his retirement the very best wishes of the Committee.

Statistical Statements.

The report of the Committee is followed by the accounts of the Gas Department set out in the usual form; and an appendix contains (*inter alia*) memoranda of gas made, sold, &c., for each year from that ending May 31, 1901, down to the last. We give below the particulars for the past two years.

Memoranda of Gas Made, Sold, &c.

—	Year Ending May 31, 1914.	Year Ending May 31, 1915.
Quantity of gas made . . . cubic feet	8,112,616,000	8,343,718,000
Do. sold or accounted for . ,,	7,469,436,602	7,693,226,219
Do. unaccounted for . . . ,,	643,179,398	650,491,781
Do. do. . . . . per cent.	7·928	7·796
Average price received per 1000 feet sold .	1/10·983	1/10·703
Average price per ton of coal carbonized .	13/1·685	12/5·178
Cost of coal per 1000 cubic feet of gas made	1/3·18	1/2·02
Capital employed per 1000 cubic feet of gas sold	6/3	6/8
Coal in stock at beginning of year . tons	84,511	100,230
Coal received during year . . . . ,,	796,785	800,857
Coal carbonized during year . . . ,,	781,066	811,356
Coal in stock at close of year . . . ,,	100,230	89,731
Quantity of coke sold . . . . . ,,	307,984	367,364
Average price received per ton of coke .	9/7·911	8/2·956
Quantity of coke sold, per ton of coal carbonized	7·856 cwt.	9·055 cwt.
Average price received for ammoniacal liquor and tar per ton of coal . .	4/11·436	4/1·285
Quantity of gas made per ton of coal . .	10,386 c. ft.	10,284 c. ft.
Quantity of gas sold or accounted for, do. .	9,563 ,,	9,482 ,,
Quantity of gas unaccounted for, do. . .	823 ,,	802 ,,
Illuminating power of gas prescribed . .	14 cand.	14 cand.
,, ,, ,, supplied . .	17·48 ,,	17·36 ,,
Number of public lamps—flat-flame .	554	508
,, ,, ,, incandescent .	29,522	29,682
High-pressure lamps	67	81
Cookers and range fittings on hire and on loan	109,338	124,825
Grills on loan	25,152	25,473
Gas-rings on loan	37,662	47,358
Gas-heating appliances sold—hire-purchase system	4,119	3,302
Gas-heating appliances on hire	26,787	45,680
Gas heating and cooking appliances sold .	4,183	3,111
Number of meters in use—ordinary. . .	202,303	195,557
,, ,, ,, —prepayment .	88,008	97,461
Capacity of holders—cubic feet	44,376,000	44,376,000
Greatest quantity of gas delivered in one day, cubic feet	38,243,000	38,663,000

MANCHESTER MUNITION PROSECUTION.

Messrs. R. & J. Dempster's Workmen Fined.

An important prosecution under the War Munitions Act was heard at the Manchester Town Hall on Saturday, before Mr. A. J. ASHTON, K.C., the Recorder of the City; the Assessors sitting being Mr. LEONARD MASSEY (for the employers) and Mr. FRANK WILLIAMS for the men.

The defendants were fourteen labourers employed on munition work by Messrs. R. & J. Dempster, of Miles Platting, Manchester. The Recorder had the defendants separately before him.

Mr. GILBERT JORDAN, barrister, who conducted the prosecution, said that on Aug. 5, owing to a grievance about wages, the men left their employment. In previous disputes, the men had always seen the night foreman before striking; but in this case they had not done so. In an interview, the men were told of the penalties of leaving work under the Munitions Act; but it was not until Tuesday, Aug. 10, that work was resumed. The men had since received an advance of 2s., making 25s., and 10 per cent. war bonus irrespective of hours.

The men, who were not legally represented, stated that they did not know they were on munition work until told by Mr. Henry Knight, the Works Manager.

Mr. JORDAN added that the present proceedings had been instituted for the purpose of bringing it home to the men engaged by Messrs. Dempster that they came within the provisions of the Act, and that they must not absent themselves because of a supposed grievance.

Evidence having been given for the prosecution,

One of the defendants declared that the dispute had arisen not so much because of a wages grievance, but owing to the works being shorthanded. Some men, he alleged, had left, and gone to other works; and yet they had not been summoned. It accordingly appeared to him and other workmen that they were not engaged on munition work.

Mr. KNIGHT denied this—asserting that labourers had only been permitted to leave in proportion to the moulders with whom they worked.

Another defendant said it was true that they were warned against infringing the provisions of the Munitions of War Act by striking before their differences with their employers had been reported to the Board of Trade. When, however, they heard the Act read, they candidly confessed that they had "made a mess of things." They certainly were unaware that they were engaged on munition work. They were not then members of the National Union of Gas Workers and General Labourers, or they would not have been allowed to go out. They had, however, since joined the Union.

Mr. KNIGHT, replying to the Recorder, said this was the first time there had been anything in the nature of a strike at the works since the war started. He had always been willing to hear the men's complaints; and as a rule matters were amicably adjusted. On Aug. 5 the labourers suddenly ceased work, and sent a deputation of three to see him. He reminded the men of the Munitions Act, and its provisions regarding arbitration—advising them to return to work. But they did not do so, and absented themselves for the following two days (Friday and Saturday). On the Monday another deputation came from the labourers; and he told them that an undertaking of some sort must be given, to ensure that this kind of thing would not happen again. The undertaking was not given; but the men went away as though they were prepared to return to work. The moulders who had been stopped owing to the absence of the labourers required an undertaking that the labourers would not be allowed to go on strike when they wished.

In reply to Mr. WILLIAMS, witness said that eventually the moulders and labourers had a meeting; the result being that things were fixed up satisfactorily. Work was resumed on Tuesday last.

One of the defendants pleaded that he twisted his back on the day before the strike commenced, and consequently he could not go to work until the Monday morning. He then found that the moulders would not start.

The RECORDER accepted this explanation, and the summons was withdrawn.

THE RECORDER'S WARNING.

Addressing another of the defendants, the RECORDER remarked that if he took the line that he would not go back to work until he had got all he wanted, he might have to go to prison. The men knew their remedy—they could have arbitration, but they must not go out.

Most of the men declared that they were unaware that they were on munition work, and each was informed that the next penalty would be imprisonment.

In giving judgment, the RECORDER stated that he had taken into consideration the fact that many of the men were unaware that it was Government work they were on until they were told. Eleven of the defendants would be fined 5s., one 10s., and a youth 1s., the money to be paid within twenty-one days. Had the men been aware that they were engaged on Government work, he would have had to have dealt with them more severely.

Messrs. Dempster's did not press for costs.

Middleton Gas Prices Increased.—At the last meeting of the Middleton (Lancs.) Town Council, the proposal of the Gas Committee to increase the price of gas for lighting and power purposes 4d. per 1000 cubic feet, as and from July 1, was approved.

Tralee Gas-Works.—The Tralee Urban Council have agreed to the erection of a carburetted hydrogen gas plant at the gas-works, as an auxiliary to the coal gas-making plant; and the tender of Messrs. Bale and Hardy has been accepted, at £1100. The plant will be capable of producing 100,000 cubic feet of gas per day; and the cost of manufacture is guaranteed to be not more than 1s. per 1000 cubic feet.

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See "Journal" for May 25 and June 1 & 8 (pp. 471, 525, & 596).

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NOTES FROM SCOTLAND.

From Our Own Correspondents.

Saturday.

At the last monthly meeting of the Fraserburgh Town Council, the Provost intimated that the Gas Committee had unanimously resolved that for the current year it would be necessary to raise the price of gas from 4s. 2d. to 5s. per 1000 cubic feet owing to the increased price of coal in consequence of the war. The gas used for manufacturing purposes would be increased in proportion—from 3s. 9d. to 4s. 7d. In the course of the proceedings, Bailie Anderson said the reason those who used gas for manufacturing purposes got it at a lower rate was because they used it in the day time. But this did not apply now, as some used it in order to generate electricity. While it might be better to adopt the Committee's recommendation now, he thought gas should be sold at a uniform price to all. Mr. Robb dissented from Bailie Anderson, and pointed out that Aberdeen supplied gas for manufacturing purposes at 1s. 7d., in order to encourage industry. The recommendation of the Committee was agreed to.

The development of the business side of the Dundee Electricity Department has seemingly been arrested for the time being. At a meeting of the Committee some days ago, the Convener (Mr. Nairn), in replying to a question, said that the department could not at present undertake any new lighting or power installations, unless it was for Government work. The cause of the inability to accept new work was, he added, that they had too few men.

The price of gas at Peterhead has been advanced by 6d. per 1000 cubic feet—to 4s. 2d.

The Keith Town Council some time ago accepted the offer of a local builder for the construction of a reservoir at Cuthill in connection with the recently introduced water supply from Cairnie. The work was commenced some time ago, the excavations completed, and the floor of the reservoir laid. At a recent meeting of the Council a letter was read from the Local Government Board asking whether the Council could see their way to postpone the completion of the work for some time. The Council have replied that they are agreeable, provided a loan for the outlay already incurred be given at the original rate—4 per cent.—and that the balance of the loan when required be given at the same figure.

Dundalk Gas Company and Municipal Accounts.—At the recent audit by Mr. Reddy, Local Government Board Auditor, of the accounts of the Dundalk Urban Council, Mr. George Airth (the Secretary and Manager of the Dundalk Gas Company), and Mr. Smyth, of Belfast (the Company's Auditor), attended and raised a number of points for the Official Auditor's consideration. Objection was taken by the Chairman of the Council to the status of Messrs. Airth and Smyth, and to their being allowed access to the books of the Electric Department.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Aug.* 16.

The tar products market remains steady. There is a growing inquiry for pitch for the coming season, and the price is unaltered at 26s. per ton net in bulk at makers' works. Other products remain without change at the values last recorded.

Sulphate of ammonia continues steady at £14 8s. 9d. per ton net in buyers' bags at makers' works for 25 per cent. quality.

Tar Products in the Provinces.

Aug. 16.

The markets for tar products have remained fairly steady throughout the past week. Little business can be done in pitch, as buyers will not pay the prices being asked at the present moment. Solvent and heavy naphthas are in fair demand, and maintain their price. Creosote is quiet, and it is stated that large quantities are being offered at very reasonable figures. Business is reported in crude carbolic at 3s. 6d. to 3s. 7d. per gallon.

The average values of gas-works products during the past week were: Gas-works coal tar, 21s. 6d. to 25s. 6d. Pitch, London, 23s. to 24s.; East Coast, 22s. to 23s. per ton; Norfolk, Suffolk, and Humber ports, 19s. to 20s.; West Coast, 20s. to 21s. Manchester; 21s. to 21s. 6d. Liverpool; 23s. Clyde. Benzol, 90 per cent., naked, 11½d.; North, 10½d. to 11d.; 50-90 per cent., naked, North, 1s. 3d. to 1s. 4d. Toluol, naked, North, 2s. 2d. to 2s. 4d. Crude naphtha, in bulk, North, 6d. to 6½d. Solvent naphtha, naked, North, 1s. 10d. to 1s. 11d. Heavy naphtha, naked, North, 1s. 2d. to 1s. 3d. Creosote, in bulk, North, 3d. to 3 1/16d. Heavy oils, in bulk, 3¼d. to 4d. Carbolic acid, casks included, 60 per cent., East and West Coasts, 3s. 6d. Naphthalene, £8 to £16; salts, 75s. to 80s., bags included. Anthracene, "A" quality, 2d. to 2½d. per unit; "B" quality, nominally ¾d.

Sulphate of Ammonia in the Provinces.

LIVERPOOL, *Aug.* 14.

Throughout the week the market for this article has remained in a lethargic state, but values have been fairly well maintained. Few fresh orders have come forward, and the delay on the part of the War Trade Department in issuing export licences has continued to hinder shipments against former contracts. The quotations at the close are £14 11s. 3d. to £14 12s. 6d. per ton f.o.b. Hull, £14 12s. 6d. to £14 13s. 9d. f.o.b. Liverpool, and £14 15s. to £14 16s. 3d. f.o.b. Leith. Manufacturers have now modified their views a little in regard to the forward position, and have reduced their price for October-March

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delivery to £15 to £15 2s. 6d. at the ports; but no actual business has transpired.

Nitrate of Soda.

The values on spot have advanced further; to-day's quotations being 12s. 9d. per cwt. for ordinary, and 13s. for refined.

Sulphate of Ammonia.

From another source it is stated that this market has been exceedingly quiet throughout the past week, and lower prices have been accepted in several instances. There is certainly a weakening, and one or two lots have been offered without finding buyers. Outside London, makes are quoted at £13 2s. 6d.; Hull, £14 12s. 6d.; Liverpool, £14 15s.; Leith, £14 17s. 6d.; Middlesbrough, £14 12s. 6d.

COAL TRADE REPORT.

Northern Coal Trade.

There is a slight ease in the coal trade, due in the main to the irregular granting of licences for the export of coal under the new regulations, so that cargoes are thrown on to the home market. In the steam coal trade, the demand is fair, and the prices show slight variations. Best Northumbrians are quiet at 20s. 6d. to 21s. 6d. per ton f.o.b.; second-class steams are 16s. 6d. per ton; and steam smalls are from 13s. 6d. to 15s. 6d. per ton, with a fair demand, and with shipments that are rather above those of a year ago. Production of gas coals is now pretty full, when the lessened number of men at the collieries is taken into account. There is an increasing demand; and the amounts that are being shipped will help to increase the stocks. Best Durham gas coals are steady, at 20s. 6d. to 21s. per ton f.o.b.; second-class qualities are about 17s. to 18s. per ton; and "Wear Specials" are quoted at 23s. per ton f.o.b. There is the improving demand that is above referred to; and the larger demand for other classes of Durham coals also affects the price of gas coals—sales of Durham unscreened being reported for next year at about 17s. 6d. per ton f.o.b. Contracts for gas coals are few at present—buyers waiting to see what the limitation of prices under the new Act may lead to. Freights on gas coal are steadier—on the basis of 7s. Tyne to London, and 13s. 6d. to Rouen, which show the cost of the sea-carriage of gas coal to two of the great markets at present. It is hoped that the Durham miners will allow suspension of some regulations to permit of a fuller output. In coke, the inquiry is fairly full. Gas coke is steady in price; for good qualities, 26s. to 27s. per ton f.o.b. in the Tyne is about the present quotation.

Canadian Loyalty.

There was an enthusiastic scene at a prize-giving of the Toronto Consumers' Gas Company Rifle Association, when the President (Mr. A. W. Austin) announced that he had decided to present, at his personal expense, a rapid-firing gun to the Canadian Department of Militia. He expressed gratification at the enthusiastic patriotism of the Company's employees, over 140 of whom had enlisted for active service. Amid the rejoicing there was, however, the stern fact to be faced, that after a year of battles the end of the war was not yet definitely in sight. While there was no reason for Britons, and especially Canadians, to be downhearted, the situation was still one which called for serious thought on the part of every man physically fit and free to enlist. The Company were proud of the record already made by the employees, and would gladly give every encouragement to any others who might decide to go to the front. He regarded it as of the utmost importance that the Canadian regiments should be equipped with machine guns to the fullest extent required by maximum efficiency, and said they had decided to contribute to the cost of one machine gun to be placed at the disposal of the Ottawa Department of Militia as speedily as possible. Mr. Arthur Hewitt (the General Manager) said it afforded him great pleasure to learn that employees of the Company were also raising the money to present an additional machine gun to the Canadian forces. He congratulated the officers and members of the Rifle Association on the promptness with which they organized for military training immediately after the outbreak of the war. He understood that the Association could, within two hours, place 200 men fully armed at any given point within the city limits in case of an emergency call.

Gas Workers and War Badges.—The following remarks on the provision of war badges [which forms the subject of a communication from Mr. W. T. Dunn which will be found on another page] appear in the "Birmingham Gas Department Magazine." For some time past the Gas Committee have been urging the War Office to provide badges for those members of the staff and workmen whose services are essential for the production and supply of gas in Birmingham. As no satisfactory reply has yet been obtained, and as numbers of the workmen are still enlisting and seriously jeopardizing the position at the works, the Gas Committee have decided to issue a Departmental Badge to all men who are essential. This is the best that can be done; but the action (or rather inaction) of the War Office still leaves the position unsatisfactory. For the maintenance of the manufacture of munitions in Birmingham, the provision of an efficient gas supply is necessary; and in our opinion the task of the department would have been more easily fulfilled if Government, instead of departmental, badges had been forthcoming.

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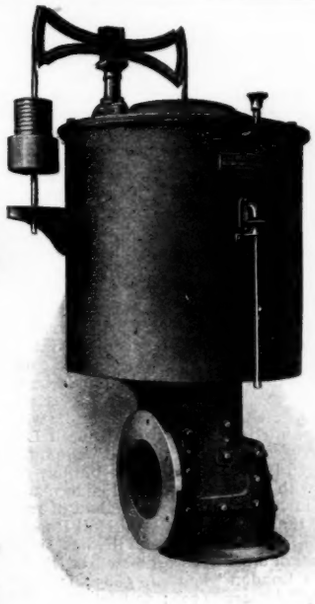

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Portsea Island Gaslight Company.

In the report for the half year ended June 30, which will be submitted at the meeting on Thursday of this week, the Directors state that the profit and loss account shows an available balance of £40,990, which enables them to recommend the declaration of a dividend for the half year at the following rates per annum: 13 per cent. on the "A" and "B" shares; 12 per cent. on the "C" shares; 10 per cent. on the "D" and "E" shares; and 5 per cent. on the 5 per cent. (maximum) stock (less income-tax). This will leave a balance of £22,308 to be carried forward. Notwithstanding the abnormal conditions, the quantity of gas sold was only 2·74 per cent. less than during the corresponding half of 1914, which showed an unusually large increase over any like period. The number of consumers and the number of cooking and heating appliances on hire continue to increase. Owing to the restricted means of transport by rail and sea, great difficulty has been experienced in obtaining adequate deliveries of coal and oil fuel. This, and serious shortage of labour, have occasioned the management considerable anxiety. The new chief offices and show-rooms were opened on the 19th ult.; and the greatly improved facilities which these premises afford for the conduct of the Company's business are much appreciated both by the public and the staff. The Engineer and General Manager (Mr. J. D. Ashworth) reports that the buildings and plant at the several stations, and also the mains and meters, have been adequately maintained, and are in efficient working order. The Directors recommend the usual donations of £50 and £5 5s. to the Portsmouth, Portsea, and Gosport Hospital, and the Portsmouth Eye and Ear Infirmary respectively; also the distribution of coke to the value of £100 among the poor resident within the limits of the Company's supply during the ensuing winter.

Tunbridge Wells Gas Company.

Presiding at the half-yearly meeting of the Company last Wednesday [when dividends at the rates of 13, 10½, and 10 per cent. per annum were declared], the Chairman (Alderman W. H. Delves) said that, having regard to the great increase in the cost of coal, it was a subject for congratulation that the Directors were able to recommend the usual dividends, and had not had to increase the price of gas. In June this year the Company were paying 30s. per ton for coal which they bought at 18s. 7d. per ton a year ago; but he contemplated some reduction as a consequence of Government action. The results for the half year were very satisfactory; for the Engineer (Mr. Andrew Dougall) had been able to produce 200 cubic feet of gas per ton more than last year. The presence of so many troops in the town had led to a considerable increase in the consumption of gas—but the restriction of lighting made it very doubtful whether this increase—which, by the way, was a record in the history of the Company—would be continued in the second half of the year. So far the town had not been raided; and he hoped it would be possible to relax the present conditions, not only for their sake as a gas company, but because of those who had to use the streets at night. While they hoped to manage without any increase in the price of gas, it was manifest that if the present cost of coal continued for any length of time the Directors would have to consider the matter. Judging from the reports of the meetings of other undertakings, it was an almost unique experience for a gas company not to have to raise the price. About fifty of the Company's employees were at the front; three had been killed in action; while one had died of disease. They very much regretted the loss of these men, and their sympathies went out to those who were left behind. The consolation was they had died, not for themselves, but for their country, in fighting against the horrors committed by "those German brutes."

Lighting a Government Housing Site.

The question of lighting the roads on the Government housing site at Woolwich has been under the consideration of the Works Committee of the Woolwich Borough Council. The houses are now being let; and it is necessary that arrangements should be made to erect the required number of lamps before the dark evenings set in. As electricity is not available for public lighting on the estate, the Deputy Borough Engineer had an interview with Mr. Talbot, the Superintendent of Lighting to the South Metropolitan Gas Company, who stated that the Office of Works had suggested that a column more ornamental in design than the ordinary pattern should be used in the estate roads. Mr. Talbot forwarded photographs of various columns, which were submitted to the Committee. The prices were as follows: "Eddystone" column, fitted complete with "South London" lantern and inverted burner, £7 7s. 6d.; "Eddystone" column, fitted complete with "Metro" improved lantern and inverted burner, £5 17s. 9d.; ordinary column, fitted with "Metro" improved lantern and inverted burner, £4 7s. 9d. These inverted burners give a light of 120-candle power. On the portion of the estate east of Well Hall Road, approximately 70 lamps will be required, and about 50 on the west side, making a total of 120. The first cost of erection is estimated at (1) for "Eddystone" column with "South London" lantern, £885; (2) for "Eddystone" column with "Metro" lantern, £706; and (3) for ordinary column with "Metro" lantern, £526. The cost of lighting and maintenance for 120-candle power lamps is £3 10s. 7d. each per annum, representing an annual expenditure of £423; or if fitted with No. 2 burners, the price for maintenance is £2 15s. 3d., or an annual expenditure of £331. In the Committee's opinion, the ordinary column, fitted with "Metro" lantern and No. 2 burner, as used in the majority of side steets in the district, is quite suitable for the roads on the Government estate. They accordingly asked the Finance Committee to pass a supplemental estimate to cover the first cost of erecting these lamps, and to cover the cost of maintenance from September next, estimated at £165.

Wexford Gas Company.—At a meeting of the Wexford Corporation, Mr. M'Guire proposed that the Gas Company's account for £518 should be reduced by amounts commensurate with the number of lamps that were found to be unlit. He contended that the Gas Company had made no effort to meet the Corporation in this matter. They wanted value for their money, and in his opinion they were not getting it. It was decided to pay the Company £500, and retain the balance.

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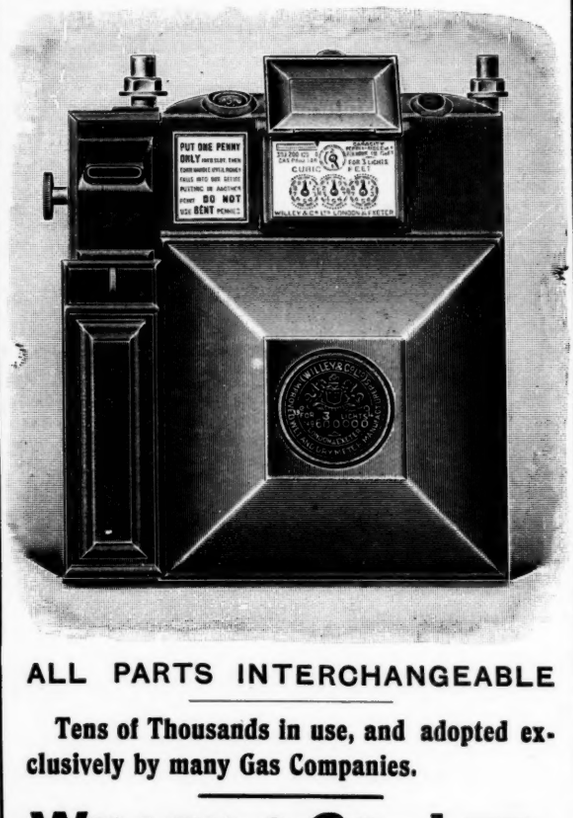

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Dublin Reservoir Dispute Settled.

The Dublin Corporation, at a special meeting last Thursday, had before them a report from the Lord Mayor (Mr. J. M. Gallagher) and Alderman Farrell, the Chairman of the Water-Works Committee, recommending a compromise in reference to a claim for extras in relation to the contract for the new reservoir at Roundwood—the Council to pay £2200, and the Contractor (Mr. Mackay) to abandon all claims comprised in a statement submitted by him, and also all claims for delay. Mr. Mackay had agreed to this, provided the amount were increased to £2500 and 15 per cent. more on the value of the new plant already put on the works, which would amount to £750. Under the terms of the contract, he was entitled to a sum of £5000 for new plant, 75 per cent. of which amount was payable when the plant was put on the works. The Lord Mayor and Alderman Farrell now asked the Council to accept this modification, since it would wipe-out the prospect of any serious and troublesome litigation, and would also obviate the stoppage of the works. Several members wished to have the matter postponed, pending further consideration by the Water-Works Committee; but the suggestion of the Lord Mayor and Alderman Farrell was endorsed by 17 votes to 5.

Illegal Badges.—The Minister of Munitions (Mr. Lloyd George) has announced the rule he has made under the Munitions of War Act with respect to war service badges. The rule says: "No person shall, except with the express authority of the Minister, make, sell, issue, or wear any badge similar in form or appearance to any badge supplied or authorized by the Minister, or any colourable imitation thereof, or any badge or other distinctive mark calculated or intended to suggest that the wearer is engaged on munitions work or other work for war purposes." Under the Munitions of War Act, any person who acts in contravention of this rule is liable for each offence to a fine not exceeding £50.

War Bonus Question at Oldham.

A Special Committee of the Oldham Corporation last Thursday night discussed for nearly four hours the question of granting a war bonus to their employees. The original application [*ante*, pp. 45, 307] was for a war bonus of 5s. per week for men engaged in the Gas and Water Departments; but this application was followed by others, the Committee being faced with what was practically a general demand for an advance in wages. The application of the Gas Workers' Union had twice been refused by the Town Council; but a week ago the men threatened to come out on strike unless their claim was granted or referred to arbitration. As a result, a Special Committee was appointed to consider the whole question. Mr. J. R. Clynes, M.P. (the General Secretary of the Union), and a deputation of the men waited upon the Committee, and impressed upon them the necessity of an immediate settlement of the men's claim. The question was then privately discussed by the Committee, who decided to recommend that a bonus of 2s. per week be granted to all employees of the Corporation over 21 years of age whose wages do not exceed 28s. per week, and 1s. per week to those in receipt of 29s. per week—the bonus, therefore, being confined to those whose wages, including the war bonus, will not exceed 30s. per week. A special meeting of the Town Council has been called for to-morrow (Wednesday); and if the recommendation is sanctioned, the advance will date from last week.

Danger of a "Slack" Gas-Tap.—In the course of an inquiry at Preston concerning the death from gas poisoning of a very young maid-servant, it was stated that the tap of the gas-bracket in deceased's bedroom [where she was found dead] was "rather slack" and that anyone turning it off might very easily turn it on again accidentally. It was only a week since the girl had left her home in the South of Ireland, where she had not been accustomed to the use of gas. The Jury returned a verdict of "Death through misadventure."

GAS COMPANIES IN THE STOCK EXCHANGE.

As might be expected, business on the Stock Exchange last week was very quiet again. The daily record was slight, and the House was closed altogether on Saturday. But the general tone was by no means unsatisfactory, and several markets, despite a lack of activity, exhibited some strong points. Operations bulked largely in the Government issues, among which there was very fair activity in the War Loan and the convertible issues linked therewith, which closed steady after a momentary slight drop and subsequent recovery. Home Rails continued dull on the whole. The North-Western Company's preference stock issue [referred to last week] was a success, and the list was closed a day before the date-limit. Canadian interests were bright, encouraged by good harvest prospects and the maintenance of the Canadian Pacific dividend. American, South African, and the Foreign Market had some good points; and the firmness of warlike appliances in the Miscellaneous Market was conspicuous. Business in the Gas Market was quiet—apparently settling down to what appears to be becoming the normal average. Transactions were neither heavy nor numerous; but they tended rather to foreshadow a strengthening tendency. This feeling has probably been influenced by the reported proceedings at recent meetings of important companies. These were characterized by the conspicuous fairness with which the Chairmen placed before the proprietors the unfavourable factors which had beset their undertakings during the past half year, and the discreet moderation with which they dwelt upon the points of improvement to be descried in the future. The satisfaction and the grateful appreciation of the shareholders were everywhere heartily forthcoming. The Money Market received an influx of gold which produced ease.

Bargains done for cash during the week were as follows: On Monday, Bournemouth "A" 26⅛, 26¼, ditto "B" 12⅜, 12½, ditto preference 11, 11⅜, European 11⅞, Imperial Continental 56, South Metropolitan 81½. On Tuesday, Gas Light ordinary 81, 81¼, 81½, ditto maximum 60½, ditto preference 73, ditto debenture 62, 62½, 62⅝, South Metropolitan 82½. On Wednesday, Commercial debenture 55½, 55⅞, Gas Light ordinary 80½, 81⅜, ditto preference 72, ditto debenture 62, 62½, South Suburban debenture 95⅞. On Thursday, Commercial 4 per cent. 85, 87, *ex div.*, Gas Light ordinary 78½, 79⅜, 81, 81½ *ex div.*, ditto preference 73, South Suburban debenture 96½. On Friday, Commercial debenture 57½, 58, Gas Light ordinary 80, ditto preference 70½, 70⅞, 71½ *ex div.*, Ilford debenture 75½, South Metropolitan 81½ *ex div.*, South Suburban debenture 95, 96⅜.

The Bank rate is 5 per cent.—as fixed on Aug. 8, 1914.

LOWEST AND HIGHEST PRICES OF BARGAINS DONE FOR CASH IN THE WEEK ENDING AUG. 14.

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices. July 30.	Yield on Highest Closing Price.	Lowest and Highest Prices of Bargains.
£			p. c.		£ s. d	£ s. d	
1,551,868	Stk.	April 8	2½	Alliance & Dublin Ord.	59—64	3 18 2	..
374,000	,,	July 10	4	Do. 4 p.c. Deb.	76—79	5 1 3	..
280,000	5	April 29	7½	Bombay, Ltd.	5¼—6⅜	6 17 8	..
50,030	10	Feb. 26	16	Bournemouth Gas and Water — 10 p.c.	29—30	5 6 8	26¼—26⅜
873,480	10	,,	7	Bournemouth Gas and Water — B 7 p.c.	15—15½	4 10 4	12⅛—12⅜
95,000	10	,,	8	Bournemouth Gas and Water — Pref. 6 p.c.	13½—14	4 5 9	11—11 1/20
—	—	—	—	Do. Deb.	..	—	.
880,000	Stk.	Feb. 26	14	Brentford Consolidated	261—266	5 5 3	..
830,000	,,	,,	11	Do. New	204—209	5 5 3	..
50,000	,,	,,	5	Do. 5 p.c. Pref.	109—111	4 10 1	..
206,250	,,	June 11	4	Do. 4 p.c. Deb.	91—93	4 6 0	..
217,380	Stk.	Feb. 26	11	Brighton & Hove Orig.	208—213	5 3 4	..
244,200	,,	,,	8	Do. A Ord. Stk.	154—159	5 0 8	..
630,000	20	Mar. 26	12½	British	44—45	5 11 1	..
120,000	Stk.	June 26	4	Do. 4 p.c. Deb. Stk.	88—90	4 8 11	..
245,771	Stk.	June 26	4	Buenos Ayres 4 p.c. Deb.	85—87	4 12 0	..
100,000	10	—	—	Cape Town & Dis., Ltd.	1½—2½	—	..
100,000	10	—	—	Do. 4½ p.c. Pref.	4—6	—	..
100,000	Stk.	June 26	4½	Do. 4½ p.c. Deb. Stk.	70—75	6 0 0	..
157,150	Stk.	Feb. 26	5	Chester 5 p.c. Ord.	108—110	4 10 11	..
1,513,280	Stk.	Feb. 12	5/9/4	Commercial 4 p.c. Stk.	106—108	5 1 2	85—87*
560,000	,,	,,	5½	Do. 3½ p.c. do.	103—105	5 1 6	..
475,000	,,	June 11	3	Do. 3 p.c. Deb. Stk.	69½—71½	4 3 11	55½—58
800 000	Stk.	,,	4	Continental Union, Ltd.	76—79	5 1 3	..
200 000	,,	,,	7	Do. 7 p.c. Pref.	115—118	5 18 8	..
—	—	—	—	Croydon B and C 7 p.c.	..	—	..
432,270	Stk.	—	6	Derby Con. Stk.	123—125	4 16 0	..
55,000	,,	—	4	Do. Deb. Stk.	102—104	3 16 11	..
1,002,180	10	July 29	10	European, Ltd.	17½—18	5 11 1	11⅜
16,364,910	Stk.	Feb. 12	4/17/4	Gas Light and Coke — 4 p.c. Ord.	98—102	4 15 6	78⅛*—81¾
2,600,000	,,	,,	3½	Gas Light and Coke — 3½ p.c. max.	76—79	4 8 7	60⅛
4,062,235	,,	,,	4	Gas Light and Coke — 4 p.c. Con. Pref.	96—99	4 0 10	70½*—73
4,674,850	,,	June 11	3	Gas Light and Coke — 3 p.c. Con. Deb.	73½—74½	4 0 6	62—62½
130,000	,,	,,	10	Gas Light and Coke — 10 p.c. Bonds	..	—	..
258,740	Stk.	Mar. 12	5	Hastings & St. L. 3½ p.c.	87—89	5 12 4	..
70,000	10	April 29	11	Hongkong & China, Ltd.	16½—16¾	6 11 4	..
—	—	—	—	Hornsey 7 p.c.	..	—	..
131,000	Stk.	Mar. 12	7¾†	Ilford A and C	151—154	5 2 4	..
65,780	,,	,,	6⅜†	Do. B	115—118	5 8 0	..
65,500	,,	June 26	4	Do. 4 p.c. Deb.	92—94	4 5 1	75½
4,940,000	Stk.	May 14	9	Imperial Continental	150—160	5 12 6	56
1,235,000	Stk.	Feb. 12	3½	Do. 3½ p.c. Deb. Red.	84—86	4 1 5	..
200,242	Stk.	Mar. 12	6½	Lea Bridge Ord. 5 p.c.	119—121	5 7 6	..
561,000	Stk.	Feb. 26	10	Liverpool 5 p.c. Ord. (A)	211—213	4 13 11	..
718,100	,,	,,	7	Liverpool 5 p.c. Ord. (B)	146—14	4 14 7	..
306,083	,,	June 26	4	Do. 4 p.c. Pr. Deb. Stk.	..	—	—

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices. July 30.	Yield on Highest Closing Price.	Lowest and Highest Prices of Bargains.
£			p.c.		£ s. d	£ s. d	
75,000	5	June 11	6	Malta & Mediterranean	4⅛—4⅜	6 9 9	..
250,000	100	April 1	4½	Met. of Melbourne — 4½ p.c. Deb.	99—101	4 9 1	..
541,920	20	May 28	4	Monte Video, Ltd.	11½—12	6 13 4	..
1,775,892	Stk.	July 29	4½	Newc'tle&G'tesh'd Con.	98½—99½	4 10 6	..
529,705	Stk.	June 26	3½	Do. 3½ p.c. Deb.	82—83	4 4 10	..
55,940	10	Feb. 26	7/14/0	North Middlesex 7 p.c.	14—16	5 2 8	..
300,000	Stk.	May 14	8	Oriental, Ltd.	117—122	6 11 2	..
60,000	5	Mar. 26	10	Ottoman, Ltd.	7⅛—7⅜	6 9 0	..
60,000	50	Feb. 26	13	Portsea, Island B	128—131	4 19 8	..
100,000	50	,,	12	Do. C	118—121	4 19 2	..
52,000	50	,,	10	Do. D	..	—	..
249,980	5	April 29	8	Primitiva Ord.	5½—6	6 13 4	..
499,960	5	June 26	5	,, 5 p.c. Pref.	4½—5	5 0 0	..
521,600	100	June 2	4	,, 4 p.c. Deb.	91—93	4 6 0	..
—	—	—	—	,, ,, ,, 1911	..	—	..
346,198	Stk.	June 26	4	River Plate 4 p.c. Deb.	85—87	4 12 0	..
150,000	10	May 14	6	San Paulo — 6 p.c. Pref.	10½—11	5 9 1	..
125,000	50	July 1	5	San Paulo — 5 p.c. Deb.	47—49	5 2 0	..
135,000	Stk.	Mar. 12	10	Sheffield A	213—224	4 9 3	..
209,984	,,	,,	10	Do. B	222—224	4 9 8	..
523,500	,,	,,	10	Do. C	220—222	4 10 1	..
90,000	10	May 28	9	South African	10½—11½	7 16 6	..
6,429,895	Stk.	Feb. 12	5/4/0	South Met., 4 p.c. Ord.	111—113	4 16 8	81½*—83
1,895,445	,,	July 10	3	Do. 3 p.c. Deb.	72½—74½	4 0 6	..
209,820	Stk.	Feb. 26	8½	South Shields Con. Stk.	157—159	5 6 11	..
952,795	Stk.	Feb. 26	6	S'th Suburb'n Ord. 5 p.c.	114—116	5 3 8	..
60,000	,,	,,	5	Do. 5 p.c. Pref.	110—112	4 9 8	..
—	—	—	—	Do. West Kent.	..	—	..
137,058	,,	June 26	5	Do. 5 p.c. Deb. Stk.	116—118	4 4 9	95—96½
620,740	Stk.	May 14	5	Southampton Ord.	99—102	4 18 0	..
120,000	Stk.	Feb. 12	7½†	Tottenham and District — A 5 p.c.	135—138	5 8 8	..
742,275	,,	,,	6†	Tottenham and District — B 3½ p.c.	115—117	5 2 7	..
181,255	,,	June 26	4	Tottenham and District — 4 p.c. Deb.	87—89	4 9 11	..
182,380	10	Dec. 30	5	Tuscan, Ltd.	5—6	8 6 8	..
149,900	10	July 1	5	Do. 5 p.c. Deb. Red.	93—95	5 5 3	..
236,476	Stk.	Mar. 12	5	Tynemouth, 5 p.c. max.	108½—109½	4 11 4	..
80,000	Stk.	Feb. 26	8⅜	Wandsworth, Wimbledon, and Epsom — Wandsworth A 5 p.c.	151—156	5 7 4	..
255,636	,,	,,	6⅜	,, B 3½ p.c.	129—134	5 2 7	..
108,075	,,	,,	5/17/8	,, C 3½ p.c.	110—115	5 2 0	..
352,000	,,	,,	6⅛	Wimbledon 5 p.c.	117—122	5 0 5	..
98,000	,,	,,	6⅜	Epsom 5 p.c.	121—126	5 5 2	..
88,416	,,	June 26	3	3 p.c. Deb. Stk.	66—69	4 6 11	..

* Ex Div.

Chester United Gas Company.

The 94th ordinary general meeting of the Company was held last Thursday—the Chairman (Mr. J. M. Frost) presiding. The report stated that the balance of revenue carried to profit and loss account was £3206, and a sum of £2250 had been transferred thereto from the reserve fund. Out of the balance standing to the credit of profit and loss account, the Directors recommended the payment of a dividend on the ordinary stock in respect of the half year ended June 30 of 2½ per cent. The price of gas was increased from March 18 to 2s. 11d. per 1000 cubic feet; and the Directors hoped that, with the improved condition of the residual market, this increase would enable them to meet the higher cost of coal. The new charging machines had given satisfactory results. The Chairman, in moving the adoption of the report, said he was glad to tell them that there was an increase of 3½ per cent. in the quantity of gas sold. This was very satisfactory, considering the limitations of outside illumination, the shortening of hours in licensed premises, and diminution of excursion facilities for visitors to Chester, thus reducing the demand for gas for catering. Residuals were less by £1000, due to the low prices of coke and tar. They were benefiting slightly from tar, by having adapted their manufacturing processes so as to allow the distiller to secure a larger yield of toluol from the tar they made. This had been done generally in gas-works over the country. The net result of the six months' work was that there was a balance of £3206 to transfer to profit and loss account, to which account they had also transferred £2250 from the reserve fund. They had also written-down the value of Consols to the official minimum price of 65. This had involved a reduction of the reserve fund by £1491, leaving it at £9864. The report was adopted.

Patent Lighting Company, Limited.—A Company has just been registered under this title, with a nominal capital of £100 in £1 shares, to carry on the business of manufacturers of appliances connected with the lighting or heating (by gas, electricity, or otherwise) or ventilating of railway carriages, &c. The first four Directors are named; the qualification being £10, and the remuneration £1050 to £1550 per annum (according to dividends), divided between them. The Board of Trade have authorized the acquisition by the Company of the undertakings of Pintsch's Patent Lighting Company, Limited, and Pintsch's Electric Manufacturing Company, Limited.

Northampton Gas Company.—At the annual meeting of the Company, the Chairman (Mr. C. Markham) said that they had had a very successful year, especially in view of the troubled conditions. One-third of the employees were now serving with the forces, which made it rather difficult to carry out the work expeditiously. The vertical retorts, which were now in full operation, had effected a big saving. The Directors' report stated that the total net profit for distribution, after payment of debenture interest, was £14,199. An interim dividend at the rate of 5 per cent. per annum, amounting to £6325, had been paid, leaving an available balance of £7874. The Directors recommended the payment of a dividend for the half year on the consolidated stock at the rate of 5 per cent. per annum (the maximum allowed); the two dividends amounting, less income-tax, to £12,578, leaving a balance of £1621 to be carried forward. A vote of thanks was acknowledged by the Manager (Major G. S. Eunson); and regret was expressed at the absence of the Secretary (Mr. C. H. Batten) through illness.

Bolton Gas Committee and Higher Coal Contracts.—At the last meeting of the Bolton Town Council, attention was called to the acceptance by the Gas Committee of coal contracts for the next twelve months. It was stated that the Committee had had to pay from 5s. to 6s. 3d. per ton more than last year's rates. This foreshadowed a decreased contribution from the gas department in aid of the rates, although some provision for the advance was made by increasing the price by 5d. per 1000 cubic feet—see "JOURNAL," June 8, p. 599.

Dorchester Gas Company, Limited.—The report submitted to the shareholders at the meeting last week, which dealt with the six months ended June 30, stated that, since the last meeting, the Directors had been compelled, owing to the increased cost of coal and labour, to increase the price of gas 4d. per 1000 cubic feet; and it was hoped that a further advance would not be necessary. The consumption of gas showed a decrease as compared with the corresponding period of last year, which was due to the enforced reduced public and private lighting. In consequence of the depreciation of the Company's investments, a considerable sum had been written-off the various securities. Under these circumstances, the Directors recommended that a dividend of 8 per cent. (less income-tax) be declared on the ordinary shares, and 6 per cent. on the preference shares.

Croydon Gas Company.—At the half-yearly meeting of the Company next Friday, the Directors will report that the sales of gas for the six months ended June 30 exceeded those of the corresponding period of 1914 by 0·35 per cent. The number of consumers increased in the half year by 435; that of stoves on hire is greater by 1107 cookers and 328 fires, while 99 and 194 respectively have been sold to consumers, representing a total increase in gas-stoves for the half year of 1728. In March last, the Directors, having in view the large increase in cost of coal and residuals, raised the price of gas 3d. per 1000 cubic feet from and after the date of recording the March meter-indices. In March, £25,000 of "D" stock was issued by tender, on satisfactory terms. The tank for the new gasholder has been completed, and progress is being made with the erection of the holder. Up to this date, 211 employees of the Company have enlisted, or been called up for service, with His Majesty's Forces. The Directors have with great regret to inform the proprietors of the death, on June 10, of Mr. J. C. Benwell, who had for over 37 years been an Auditor of the Company. The meeting will be called upon to elect a successor; and Mr. F. S. Sloman, A.C.A., partner of the late Mr. Benwell, being duly qualified, has intimated his intention of offering himself as a candidate. After providing for all fixed charges, there remains available for division a balance of £34,519; and the Directors recommend that dividends for the half year be declared at the rates per annum of 14½ per cent. on the "A" stock, 11½ per cent. on the "B" and "C" stocks, 5 per cent. on the "D" stock, and 10 per cent. on the "E" stock—all less income-tax. The dividends will absorb the sum of £23,790, leaving a balance of £10,728 to be carried to the next account.

The Lurgan Urban District Council have now empowered the Gas and Electric Lighting Committee to negotiate for the raising of the £47,000 required for the purchase of the gas-works.

According to the "Ironmonger," the Sheffield Gas Company are advertising sets consisting of an incandescent burner, mantle, and chimney, at from 1s. to 1s. 6d. each set, brackets from 6d., and pendants from 2s. each.

WANTED, FOR SALE, CONTRACTS, &c., ADVERTISEMENTS IN THIS WEEK'S "JOURNAL."

Appointments, &c., Vacant.

ENGINEER, MANAGER, AND SECRETARY. (North Yorkshire.) Applications by Aug. 31, to "Chairman," c/o J. W. R. Punch and Robson, Middlesbrough.

WORKS CHEMISTS. Birmingham Gas Department.

FOREMAN FITTER. No. 6078.

Meeting.

HORNSEY GAS COMPANY. No. 5, Great Winchester Street, E.C. Aug. 27. 3.30 o'clock.

TENDERS FOR

Coal.

LIVERPOOL GAS COMPANY. Tenders by Sept. 1.
PENRITH URBAN DISTRICT COUNCIL. Tenders by Aug. 31.
RAMSGATE CORPORATION. Tenders by Aug. 24.

General Stores (Glass, Lead, Valves, Iron and Steel, Lime, Cocks, Oil, Shovels, Brooms, &c.).

BRADFORD GAS DEPARTMENT. Tenders by Aug. 30.
PLYMOUTH CORPORATION. Tenders by Sept. 2.

Lamps, &c.

BRADFORD GAS DEPARTMENT. Tenders by Aug. 30.

Meters.

BRADFORD GAS DEPARTMENT. Tenders by Aug. 30.

Pipes, &c.

BRADFORD GAS DEPARTMENT. Tenders by Aug. 30.
PLYMOUTH CORPORATION. Tenders by Sept. 2.

Sluice Valves, &c.

PLYMOUTH CORPORATION. Tenders by Sept. 2.

Sulphuric Acid.

PETERBOROUGH GAS COMPANY.

Tar and Liquor.

ASHBORNE GAS DEPARTMENT. Tenders by Sept. 4.
BARNOLDSWICK URBAN DISTRICT COUNCIL. Tender by Aug. 31
BRADFORD GAS DEPARTMENT Tenders by Aug. 30.

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